Etruscan Settlement, Society and Material Culture in Central Coastal Etruria

Book

Contents

Figures

Chapter 4

Chapter 6

Chapter 7

Tables

Preface

This volume derives from a Ph.D.thesis submitted to the university of London in 1995. It contains the results of archaeological field survey in the Albegna valley and Ager Cosanus, in southern Tuscany, Italy, relating to the Etruscan period.

The survey area is described and an account of previous archaeological fieldwork and the methodology used in this work including the application of Geographical Information Systems is given. Chapter 3 presents and discusses the settlements and the settlement patterns recovered by the survey. Chapter 4 concerns the Etruscan burials found in both the survey work and previous excavations. Chapter 5 considers evidence for farming and subsistence recovered from the country side and chapter 6 presents the ceramic finds, largely pottery, from the survey. Chapter 7 uses the evidence of the survey to reconstruct a population history. Chapter 8 uses various forms of evidence to reconstruct aspects of the economic history of the area. Finally chapter 9 draws together various themes from the previous chapters. Appendices contain details of the sites.

The current text is a corrected and partially rewritten and reorganised version of the thesis text. The bibliography essentially closes in 1995. The text does not therefore refer to works such as Barker and Rasmussen's recent summary of the Etruscans, parts of which draw heavily upon this research.

The Etruscan pottery from the survey, essentially Chapter 6 of this volume, has previously been published in the electronic journal Internet Archaeology (Perkins 1998) and a database of the pottery is searchable via the article at the URL http://intarch.ac.uk/journal/issue4/perkins/index.html.

Acknowledgements

I became involved in the research from which this thesis grew in 1982 and I have accumulated debts of gratitude to many people since then. All of the people who have have walked fields in the Albegna valley and Ager Cosanus have unwittingly contributed to this thesis. Particular thanks are due to Sally, Louisa, Clio and Eleanor who have put up with this gestation of this volume. Thanks are also due to Lisa and James Fentress who have helped in many ways. Thanks are also due to Andrea Carandini whose support has made this research possible, and to Lucy Walker for her patient work at Doganella, to Ida Attolini for her social skills at Tartuchino and to Derek Kennet for his help in surviving on 10 lire a day while studying the finds from Doganella. Work in Siena was only possible through the hospitality of Michelle Hobart, Professor Pino Pucci and Battista Sanguineto. Many of the

people who live in and farm the Albegna Valley and Ager Cosanus have provided generous hospitality and advice.

Many institutions and individuals have helped to promote the field survey project in the Albegna Valley and the Ager Cosanus. The field survey itself was initiated by Professor Andrea Carandini, now of the University of Rome, and co-ordinated by Dott.ssa Maria Grazia Celuzza of the Museo Archeologico della Maremma in Grosseto and Professor Elizabeth Fentress now of the American Academy in Rome. The research has been generously supported in Italy by the Universities of Pisa and Siena, the Commitato Nazionale di Ricerca Scientifica, the Regione di Toscana, the Provincia di Grosseto, the Comunità Montana di Monte Amiata, the communes of Orbetello, Magliano in Toscana, Manciano and Semproniano. Many British institutions have also supported the project. These are the Sette Finestre Committee, the British Academy, the Society of Antiquaries of London, The British School at Rome (Faculty of Archaeology, History and Letters), the Gordon Childe Bequest (Institute of Archaeology, University College London), the Craven Committee of the University of Oxford, the University of Cambridge (Faculty of Classics), the University of Durham Excavation Committee. Publication of the excavation of the farm at Podere Tartuchino was made possible by the award of the Ellaina Macnamara Memorial Scholarship. The project would not have been possible without the support and encouragement of the Soprintendenza Archeologica per la Toscana, particularly the Superintendent Prof. F.Nicosa and Dott. G.Ciampoltrini.

Grateful thanks are due to Professor John Wilkes of the Institute of Archaeology, University College London for his patient supervision of this work while it was a Ph.D. thesis for The University of London. Thanks are also due to Dr.Ruth Whitehouse of University College London and Dr. Tim Potter of the British Museum who examined the thesis: they put right many errors and indicted areas which needed more thought and attention.

Both the University of Glasgow and Birkbeck College, University of London have contributed to this study by being generous with their institutional time. The manuscript was completed during Study Leave from the Department of Classical Studies of The Open University. Thanks are also due to the invaluable support provided over the years by the Librarians and staff of the Library of the British School at Rome.

1 Introduction to Etruscan studies

The Etruscans

The Etruscans have a reputation for being mysterious. This is no fault of their own, rather it is the result of the expectations of others. Etruscan tombs have fascinated generations: they have been the inspiration for medieval demons (Blanck 1992), and drawn modern crowds to exhibitions, as in '*Les Etrusques et l'Europe*' in Paris (Parlavecchia 1992). The spectacular remains of their civilisation have mystified for three main reasons. Firstly their own writing and language has been considered indecipherable, it uses an unfamiliar alphabet and its origins appear to be different to the origins of our own - and other ancient European languages. To compound the problems the writings that have survived do not directly address the traditional concerns of politico-military history. Secondly, ancient Latin and Greek sources are not particularly informative and much of what survives is contradictory there is no Thucidides nor Caesar to guide us through the Etruscan centuries. The written sources neatly combined to formulate the third big problem in the study of the Etruscans. Where did these people come from? The question arose because Herodotus (I, 94) says the Etruscans came to Italy from Lydia in modern Turkey, but Dionysius of Halicarnassus (I, 28) says they were aboriginal. A further theory, supported by similarities in burial practice and pottery, grew in the 18th century suggesting the Etruscans came to Italy from north of the Alps (Banti 1973, 208-11). The argument has never been completely settled but Pallottino redimensioned the problem by pointing out that the real problem is not where the Etruscans came from nor the origins of their language, rather it was the study of their civilisation (Pallottino 1947). Since that time, evidence for the Bronze Age and Iron Age development of central Italy has grown immensely and a clear cultural and spatial continuity has been demonstrated between Etruscan settlements in Etruria and their Iron age predecessors. It is now generally accepted that the Etruscans were an indigenous people (Bartoloni 1989).

The archaeology of the Etruscans is the study of these people through the first millennium BC. During this period in central Italy some of the first real cities and states in western Europe were formed and the Classical civilisation of Rome developed. For this reason the study of the Etruscans is central to the study of the cultural development of Europe.

Etruscan Studies

The study of the Etruscans has always been a balance between historical and archaeological approaches according to the questions being asked and the interests of the enquirer. The balance between the two has also changed through time. In 1878 George Dennis wrote " *The external history of the Etruscans, as there are no native chronicles extant, is to be gathered only from scattered notices in Greek and Roman writers. Their internal history, till of late years was almost blank, but by the continual accumulation of fresh facts it is now daily acquiring form and substance...*" (Dennis 1878, xxvi). He was optimistic that new archaeological discoveries would soon fill the hole left by missing written histories and that the contents of Etruscan tombs would "*...unveil to us in the nineteenth century the* arcana *of their inner life, almost as fully as though a second Pompeii had been disinterred in the heart of Etruria; going far to compensate us for the loss of the native annals of the country ... ";Parlan le tombe ove la Storia è muta*". (The tombs speak where History is silent.). Other less scholarly antiquarians were less optimistic: in 1892 Hugh Macmillan, in a antidote to descriptive guide books which contained 'curious knowledge' wrote, "*The comprehensive history of Etruria ... perished. Their language ... is gone beyond recall. ...Thus when the air and the light of modern investigation penetrated into the mystery which surrounded this strange people, all that was most important had vanished; and only the few ornaments of the tomb remained to tell us of a lost world of art, literature, and human life which had perished...*" (Macmillan 1892, 236). This passage from Macmillan makes explicit the cultural view that without language and literature the best things about the Etruscans were lost. Although Dennis is more optimistic, he is still thinking within the same cultural framework and expects that archaeological discovery will fill the gaps left by the loss of history. He is not thinking that archaeology will provide anything *other* than history. By 1927 a change can be detected in Anglo-Saxon scholarship: in his introduction to "The Etruscans" David Randall-Maciver wrote "*What I have to tell, then, in this volume will be based almost wholly on archaeological evidence, not upon any attempt to weave a coherent whole out of the patchwork of fragments embedded in obscure Latin and Greek commentators, or the biased references which occur incidentally in the works of the classical Poets and historians*". (Randall-Maciver 1927, 7). The emphasis has swung towards the archaeological evidence and the absence of history and literature is not seen as limiting the account of the Etruscans which can be given. However, almost all of Randall-Maciver's archaeological evidence was found in the tombs which surround Etruscan cities.

This urban focus of Etruscan archaeology had been prevalent almost since the beginning of Etruscan studies in the 18th century. The title of the most influential English book about Etruria published in the 19th century, The Cities and Cemeteries of Etruria (Dennis 1848) sums it up: although the book contains a wealth of topographical information its primary focus is upon the cities and their cemeteries. The urban emphasis was reinforced in the first part of the 20th century when diffusionist thinking led to an extremely influential article by Pallottino titled '*Sulle facies culturali arcaiche dell'Etruria*' (Pallottino 1939). This work wrote a convincing account of the cultural development of Etruria which derived from a careful study of artefacts and their places of origin. It identified groups of objects which were typical of the different urban centres in Etruria, traced their distribution, and identified their influence. This notion of cities and their spheres of influence tacitly informs most modern interpretation of Etruscan archaeology and is consistently replicated in current studies of material culture, usually from tombs. An example of this is a comment upon sarcophaguses found in coastal areas of northern Lazio as "...manifestazioni di riflesso della civiltà delle metropoli.."

(... items reflecting the civilisation of the cities) (Pallottino 1984, 277).

Current Approaches

A collection of essays by Professor M. Torelli, published in 1987 under the title *La società Etrusca* contains an introduction which outlines a methodology for the study of the Etruscan peoples (Torelli 1987, 9-33). Torelli identifies the establishment of an interdisciplinary 'archaeological history'. The keynote of this approach is the contextualisation of the evidence so that each individual datum might play a role in the overall understanding of the Etruscans. The strands which contribute to this understanding are specifically the contextual interpretation of traditional epigraphic and linguistic sources; the iconological reading of art; the diachronic study of urban morphology; the study of trade and consumption, particularly with reference to the Greek world; and finally, the socio-economic study of production in relation to social forces, which is in turn related to political history. Furthermore, Torelli asserts that the Etruscans should not be studied in isolation, but that their cultural history should be understood with relation to the major Mediterranean civilisations, specifically the Greeks and Romans, but to a lesser extent also the Phoenicians and Carthaginians.

The resultant 'archaeological history' is subtle and complex, however, it remains conditioned by two major factors. Firstly the positioning of the Etruscans on the peripheries of the Classical world, and the recurrence to analogies in the better documented Greek and Roman cultures, produces interpretations in which the perceived similitudes tend to dominate, and Etruscan culture becomes derivative. Similarly, the overall historical reconstruction takes on the classic form of rise, crisis, decline and fall.

The second influence, clearly visible in Torelli's schema, is the predominance of written and iconographic sources used in conjunction with archaeological evidence which derives from the elite of Etruscan society. This is largely the result of the nature of the currently available evidence and the history of Etruscology, with its preoccupation with mortuary archaeology, Greek vases and more recently urban centres and temples. Awareness of, and dependence upon previous studies is absolutely vital to building a coherent archaeology of the period but it also tends to create a rather static archaeology in which the main trajectory of development is an increasing depth of information about individual problems. Thus the manual of Etruscan studies, *Etruscologia*, is still the best single account of Etruscan civilisation, it was first published in 1942 and is now in its seventh edition (Pallottino 1984) with five reprints along the way and translations into French, English, Spanish, Polish and Bulgarian. Certainly it is not the same book that it was but it has not fundamentally changed.

To some extent the current study of the Etruscans has also been institutionalised. Not as one might at first expect in the Universities, for they are in Pisa, Siena, Florence, Perugia and Rome, circling the historical territory of the Etruscans but rather in the museums of Etruria. Each of the major Etruscan centres quite rightly has its own nationally funded museum (except Veii), however this tends to focus study of the Etruscans upon the urban centres and their necropolises and the differences between them.

Thus the urban focus of Etruscan archaeology predominates. Until recently most studies have focused upon urban problems and consequently the archaeology of non-urban Etruria has been neglected. The archaeological history of the Etruscans, as currently written, is the history of individual city states interacting with one another and the city of Rome. The cities also interact with the wider Mediterranean world, particularly the Greeks. The one thing that the cities do not seem to interact with is the landscape of Etruria which they occupy.

The contribution of field survey

The urban orientation of Etruscan studies so predominates that the largest and most important rural excavation yet undertaken, at Poggio Civitate, Murlo, has been interpreted with reference to urban archaeology as a meeting house for representatives of a league of northern cities (Phillips 1989, 79-83). The study of rural Etruria is not specifically excluded from Torelli's vision of an archaeological history but it is not discussed within his interdisciplinary framework (Torelli 1987, 9-33). Up to the present studies of the ancient landscape have yet to make an impact upon general Etruscan archaeology. This is quite remarkable since topographic studies have a long history in Italy dating from at least the beginning of the twentieth century (Potter 1979, 1-9; Barker 1985 ; Barker 1987). Notably for Etruscan studies field survey work started by J.B. Ward-Perkins in south Etruria in the early 1950's has discovered a continuum of ancient landscapes dating between the Bronze Age and the Medieval period. Detailed reports have regularly appeared in the Papers of the British School at Rome (e.g. Ward-Perkins 1955 ; 1968 ; Jones 1962 ; 1963) and the results have been synthesised in both English and Italian (Potter 1979; 1985). This work has inspired many other projects in Italy, and elsewhere (Keller and Rupp 1983 ; Barker and Lloyd 1991). Over the years, field survey has developed a series of methodologies to recover ancient landscapes and is now a well established technique (Haselgrove et al. 1985; Mattingley 1992). Only field survey can provide detailed information about the extent, form and development of a settlement system. However, more detailed investigation, by excavation, of individual settlements is often required to provide both dating evidence, in the form of pottery sequences, and economic evidence which can then be used to enhance the understanding of other rural sites discovered by survey (Potter 1979, 7-8).

Survey in south Etruria around Veii demonstrated that field survey could recover settlement patterns for the Etruscan period and provide a settlement history for the territory of southern Etruria which was not solely and account of urban history (Potter 1979, 52-92).

This study carries this process further and examines a part of Etruria, the Ager Cosanus and the Albegna Valley, where a city was built and investigates the history of its settlements,

society and material culture between the Orientalising period (7th Century BC) and the Roman conquest (280's BC).

Overview of this study

During recent years much new evidence has been collected by archaeological field survey from the Etruscan countryside (Barker 1988), which has not, as yet, become incorporated into general syntheses and interpretations (e.g. Rasmussen 1990; Perkins and Walker 1990; Perkins 1991; Barker et al. 1993). In the future this evidence will come to contribute to more general accounts of Etruria and the Etruscans. For the moment the most important observations to make are that field survey has established that there was a dense pattern of rural settlement which became established at the end of the seventh century, at the same time as the cities of Etruria began to flourish. This rural settlement was based upon cultivation of grain, vines and probably olives and the trading of agricultural surpluses. The precise nature of this rural settlement is only gradually emerging. The primary research presented in this study is an analysis and interpretation of the evidence collected in the Albegna Valley / Ager Cosanus Field Survey.

Chapter 1 provides an introduction to the landscape of the survey area and is followed by Chapter 2, an account of previous archaeological fieldwork and the methodology used in this work. Chapter 3 presents and discusses the settlements and the settlement patterns recovered by the survey. Chapter 4 concerns the Etruscan burials both from the survey work and from previous excavations. Chapter 5 contains evidence for farming and subsistence recovered from the countryside and Chapter 6 presents the ceramic finds, largely pottery, found by the survey. Chapter 7 uses the evidence of the survey to reconstruct a population history. Chapter 8 uses various forms of evidence to reconstruct an economic history of the area. Finally chapter 9 draws together various themes from the previous chapters. Appendices contain details of the sites.

1.1 The Land

Etruria, between the Tiber and the Arno, contains a rich diversity of landscapes. The area covered by this study is central coastal Etruria. The area lies between the heartlands of southern Etruria and Northern Etruria and to the west of the interior of Etruria. Within this area it will concentrate upon the valley of the river Albegna and neighbouring areas which form the southern parts of the Province of Grosseto.

Geology

Along with the whole of the northern Apennines most of the solid geology of the Albegna is of marine origin. Four structural areas have been identified in Tuscany (Abbate *et al.* 1970) and the Albegna Valley falls in to the south western area, characterised by a fault block structure, an incomplete Tuscan sequence and extensive Miocene and Pliocene sediments.[1] The geological sequence is distinct from the volcanic sequence of Latium to the south of the river Fiora.

For the purposes of this study the complex geology has been divided into fifteen classes which coincide with the major groups in the geological sequence identified on the 1:500,000 geological map of Italy (Compagnoni et al. 1978). These classes are briefly described below. The constituents of the classes are described in detail on the 1:100,000 state geological maps of the area[2].

1. Alluvium

This is a synthetic group which consists of Holocene colluvial, alluvial and fluviolacustrine deposits along with beach sediments. These are found along almost all water courses and along the coast line. They are found extensively in the lower valley and constitute the flood plain along with recent river terraces. These deposits are still being formed as a result of soil erosion and land reclamation. However not all are modern, for example Bronze age sites are found in the dunes north east of Monte Argentario and some roman sites on the lower terraces of the Albegna. Soils on these deposits vary between sandy and clayey. These are the most extensive deposits in the survey area covering over 28,000 ha.

2. Detritus

A heterogeneous group comprising large scale secondary colluvial deposits of eroded material. These may be the result of long term erosion, for example around the fringes of the Dolomitic limestone, or the result of recent rapid land slips for example in the clayey parts of the upper valley.

3. Pleistocene deposits

This is a mixed group of Pleistocene colluvial, alluvial and fluviolacustrine deposits. In the lower valley these tend to be sands and mixed sands and gravels forming low terraces to the north and south of the Albegna. On the coastal strip to the south they tend to be clayey sands and conglomerates which may be either marine deposits or ancient alluviation from the hills to the north. These are the third most common deposit in the area covering over 15,000 ha. (11.5%) of the total area. The deposits form important terraces on either side of the Albegna. South west of Marsiliana a large area of gravels and red sand (ciottolami e sabbie rosse) forms a terrace at c.15m above sea level while to the north east of Marsiliana another similar terrace flanks the river at c.50 m above sea level. To the north of the Albegna the original terraces are more dissected and the most extensive area of red sands lies to the north east of San Donato at an altitude of 15-25 m and includes the site of the Etruscan city at Doganella.

[1] A detailed account of the geology of the valley is to be found in van Berghem et al. (1984).

[2] Foglio 135 Orbetello, 128 Grosseto, 136 Tuscania, 129 S.Fiora.

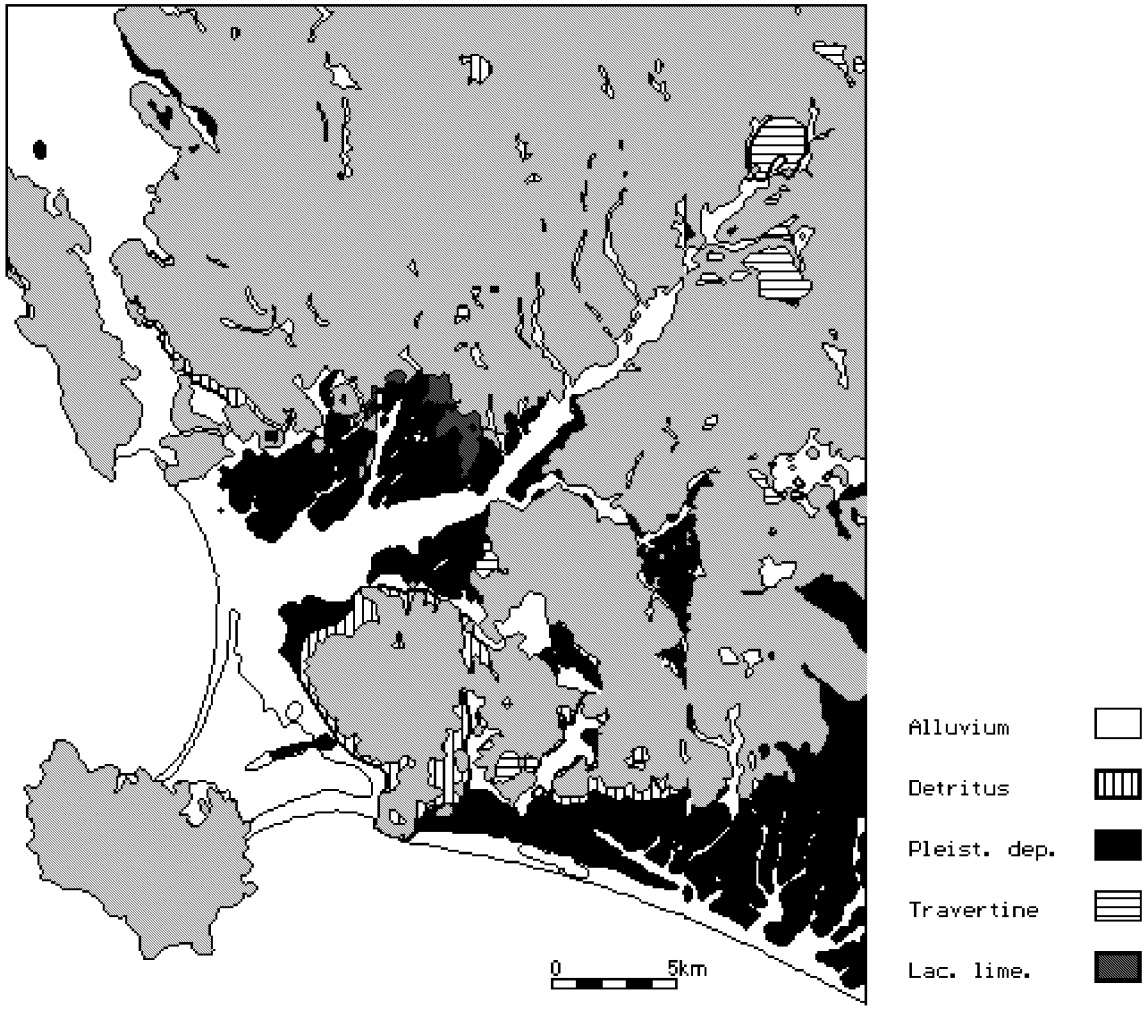


Fig.1.1.1 Geological deposits (Part 1). Key: Pleist. Dep = Pleistocene deposits; Lac. Lime = Lacustrine limestone.

4. Travertine
Small areas of travertine are scattered throughout the valley. These areas provide good building stone which is now quarried.

5. Lacustrine limestone
Lacustrine deposits forming a soft limestone which hardens upon contact with air. There is a small area of this limestone (known locally as *tufo*) in the lower valley near Magliano in Toscana.

6. Pliocene sands and clays
These are extensive deposits of heterogeneous sandy conglomerates in the middle valley.

7. Pliocene clays and marls
Clay and sandy clay deposits related to group 6 above.

8. Miocene deposits
Heterogeneous clayey conglomerates containing stones and boulders.

9. Sandstone and marls
Macigno, quartzy and micaceous sandstone deposited in the Oligocene period, occasionally mixed with marls.

10. Limestone and marl
Ogliocene limestones and marls (Alberese).

11. Shale and limestone
Silaceous shales and limestones of the Cretaceous period (Gallestro and Palombino).

12 Cretaceous marl & limestone
Cretaceous marls and limestone which dominate in the hills of the upper valley.

13 Jurassic limestone
White or grey limestones from the Lower Lias period.

14 Dolomitic limestone
Grey Dolomitic limestone (Calcare cavernoso) from the Triassic period. The stone makes good building material. The limestone is porous and the hills are waterless.

15 Clastic deposits
Sandstone and clayey schists of the Triassic period (Verrucano) which occur with the limestone (14) .

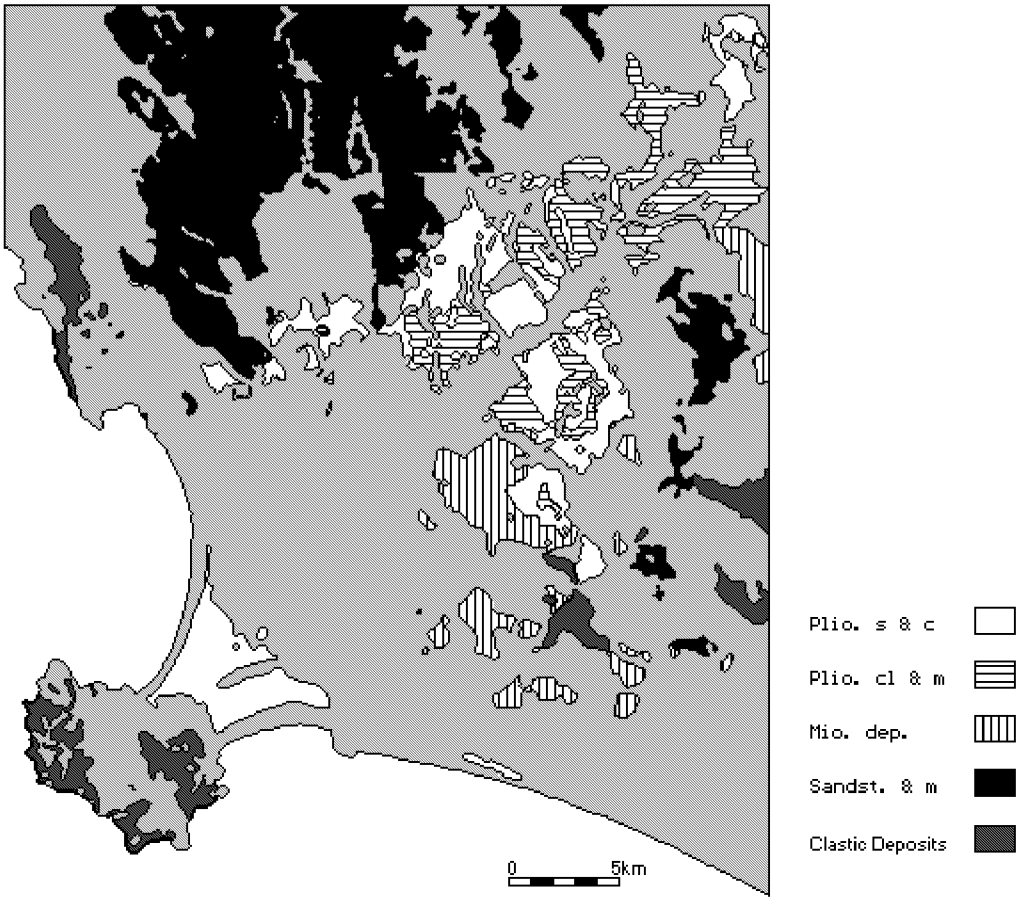


Fig.1.1.2 Geological deposits (Part 2). Key: Plio. S&c = Pliocene sands and clays; Plio. cl&m = Pliocene clays and marls; Mio. Dep. = Miocene deposits; Sandst. &m = sandstone and marls.

Minerals

Mineral deposits are not common in the survey area. Copper and iron have been mined from the eastern slopes of Poggio Mandriole on Monte Argentario, although there is no evidence for their exploitation in antiquity. Mercury and antimony have also been extracted in recent times from the Fosso Turbone east of Magliano, but once again there is no evidence for ancient working, and these minerals, although used, were not in great demand in the first millennium BC.

The Coastline

The coastline of the survey areas is in continual change and has been throughout the Holocene. Where the coast is not mountainous it was dominated until recent times by lagoons and sand bars. Today the only surviving examples are the *tomboli* (sand bars) that join Monte Argentario, otherwise an island, to the mainland. The *tomboli* enclose a lagoon in the centre of which lies the town of Orbetello, itself set upon an earlier sand bar. The sand bars and lagoon, although subject to erosion and deposition are the most stable of these features on this coast. The sand bar to the south, formed from material eroded from the coast to the south, has been present since at least the Bronze Age, demonstrated by the presence of numerous scatters of Bronze Age flints and pottery on the Tombolo di Feniglia (Mazzolai 1984, Fig.30). The northern sand bar, formed by material washed from the valley by the River Albegna, bears no settlements earlier than the Roman period, and so may have been formed in the Etruscan period. In contrast, the sand bars and lagoon further North around the promontory of Piombino, where the Etrusco-Roman city of Populonia lay, have now disappeared. The map produced in 1877 as an insert to the second edition of George Dennis' masterpiece (Dennis 1878) clearly shows the promontory as only connected to the mainland to the south by a sand bar. Since then material deposited by the river Corniá and land reclamation has turned an arrangement similar to that now surviving at Monte Argentario into a rocky outcrop completely connected to the mainland.

The most spectacular illustration of this change to the coastline is to the north of the Albegna valley in the lower part of the valley of the Ombrone, around Grosseto. In the early part of the first millennium BC the entire flood plain of the Ombrone was a large lagoon, *Lacus Prelius* to the Romans. During the early part of the millennium a sand bar formed across the mouth of the valley as far as Podere Pingrosso (shown on the geology maps as the limit of the ancient dunes). By the early part of the second century BC the sand bar had completely sealed the mouth of the valley and the river Ombrone had its own separate mouth (Curri 1978, 24-31). In 1877 an extensive lagoon, Lago di Castiglione, still lay behind this sand bar (Dennis 1878, map). The delta of the Ombrone continues to grow even today.

Changes in the Albegna valley are less extensive, but have a similar nature. At the northern fringe of the valley, the low

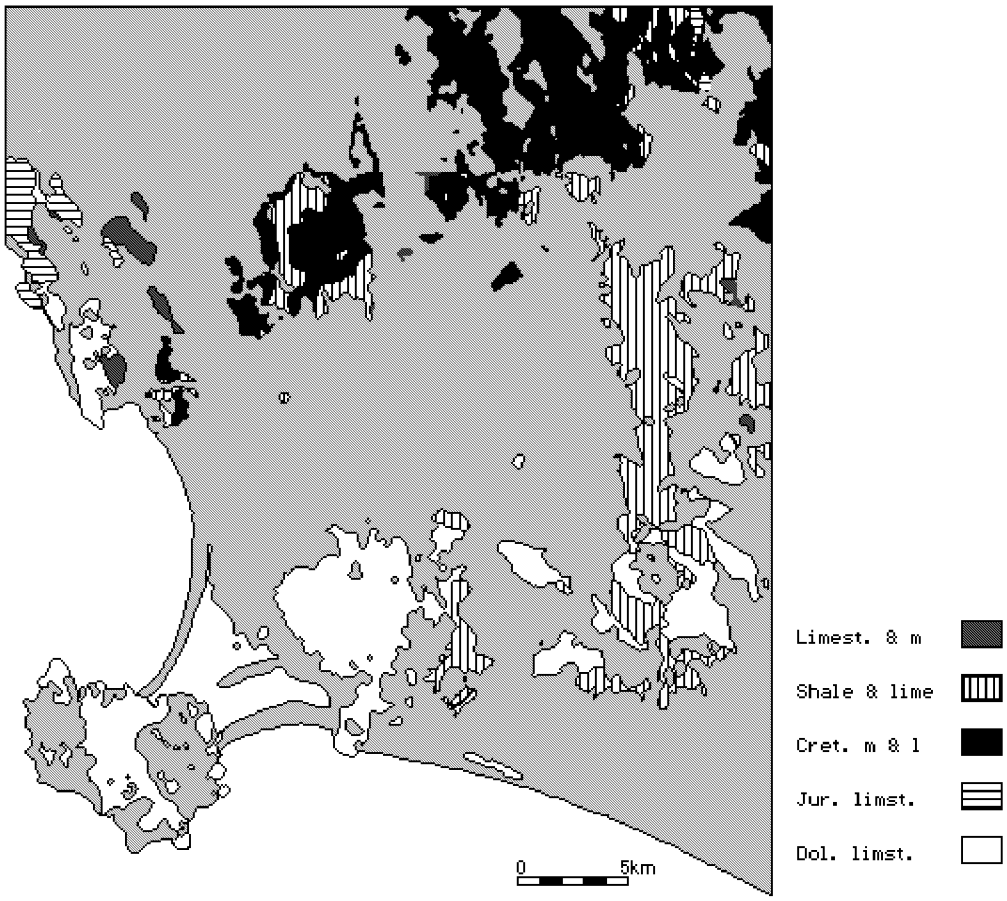


Fig.1.1.3 Geological deposits (Part 3). Key: Limest. or l = limestone; m = marls; Cret. = Cretaceous; Jur. = Jurassic; Dol. = Dolomitic.

lying land between Talamone and Talamonaccio was sea until the early part of the twentieth century. The coast line may have lay approximately four kilometres further north in the Etruscan Period. Further south between Talamonaccio and the mouth of the Albegna a sand bar seems to have existed throughout the first millennium BC. It was settled in the Etruscan period but a small lagoon seems to have survived behind it. The lagoon is marked on the 1877 map, but the distribution of Etruscan and Roman settlement in the coastal area suggests that it was nowhere near as extensive as the *Lacus Prelius*. A small area is marked on the geology map as consisting of silty lacustrine sediments immediately south of Talamonaccio seems to relate to the out flow from the Osa rather than the Albegna. Indeed, the antiquity of the current mouth of the Albegna is not certain. There were no certain port facilities here until the Roman period, and it remains a possibility that the Albegna drained into the Lagoon of Orbetello, or the northern sand bar did not exist, in the Etruscan period. The study of coastal lagoons is intricate and their recent history does not necessarily provide indications of their ancient form (Delano-Smith 1978).

South of Orbetello and Cosa the actual coast line seems to have been more stable, and to consist of a bank of ancient dunes. However behind the coast line extensive lagoons once existed. Little now remains of these lagoons other than a small expanse of open water and a fish farm on the site of the Lago di Burano. On the 1877 map all of the watercourses draining from the hills to the north, other than the Tafone are shown as draining into the lagoons, and this is likely to have been the situation in earlier periods as settlement is confined to the Pleistocene terraces in this area.

Unfortunately detailed geomorphological studies of the chronological development of this coast line are lacking, and the archaeological evidence recovered by this survey forms the best source of evidence currently available for studying its development.

Land forms and topography

The land of the survey area will be described by identifying various blocks of territory and then considering some general features of the land in the valley which can be quantified. These features will later be compared with the distributions of settlements.

The coastal strip

This is an area of relatively flat land extending between the limestone hills to the north and the sea. This area is an extension of the coastal plain which runs North from the Monti di Tolfa and constitutes the lower part of the valleys of the Mignone, Arrone, Marta and Fiora. Travelling in a north westerly direction the plain gradually narrows to be blocked by the hill upon which Cosa was built. Thus the area is structurally part of the northern Latial coastal plain. The areas closest to the sea consist of sand dunes and the remains of coastal lagoons, now largely reclaimed. Behind this is a first Pleistocene terrace at about 20-30m above sea level, and further in land a second at 70-80m above sea level. Behind these terraces the wooded limestone hills drain

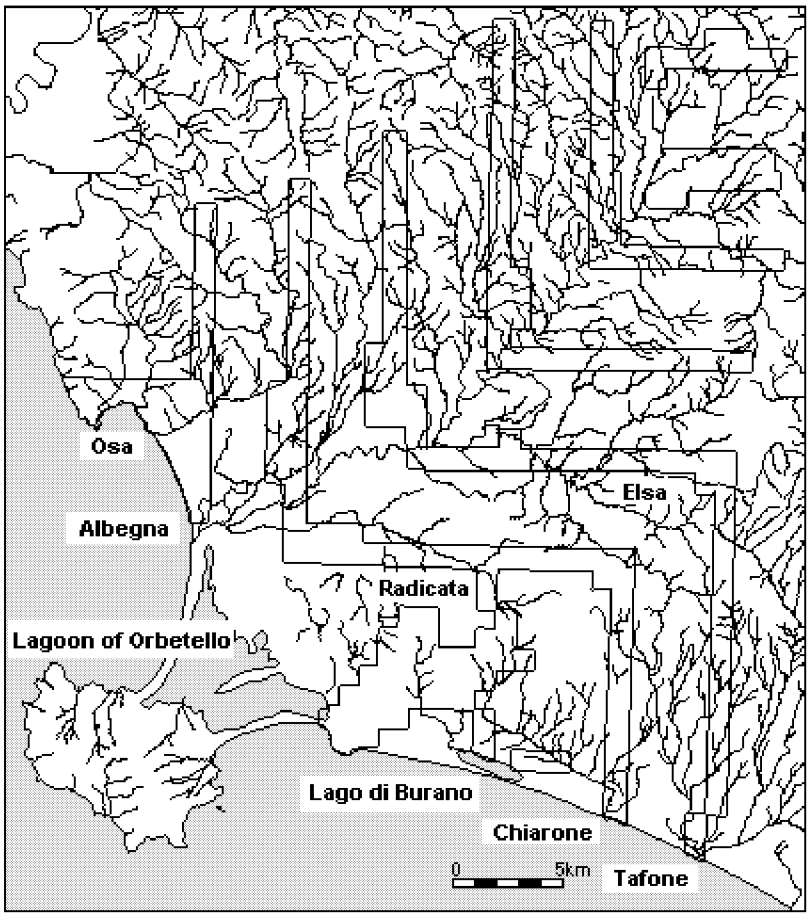


Fig.1.1.4 Drainage pattern and principal water courses

with a series of north-south streams. There are three major routes between the coastal plain and the Albegna Valley, to the east the valley of the Tafone and to the west the valley between Monteti and Poggio Capalbaccio and the Val d'Oro. The Tafone rises south of Manciano providing a potential route towards the upper Albegna valley. In the west the two valleys provide a short and easy route to the valley of the Radicata, the lowest major affluent on the left bank of the Albegna.

The soils of the coastal strip are fertile but require careful management, particularly drainage and irrigation (Jones *et al.* 1985). The terraces are largely devoted to arable cultivation, especially grain, fodder, tomatoes and sunflowers grown in rotation, but there are also some vineyards. Settlements on the coastal strip are small and scattered and individual farms or hamlets are the norm.

The southern watershed of the Albegna, Monte Argentario and Orbetello

The coastal strip to the south of the area is sharply divided from the Albegna Valley by a chain of limestone hills. From the east, Monte Bellino / Montauto (502m), Monte Maggiore (378m), Monte Capita (292m), Monteti (423m), Poggio Capalbaccio (232m) , Poggio del Leccio (354m) and Monte Argentario (635m). The northern slopes of these hills are drained by two major affluents of the Albegna the Radicata and the Elsa. The hills are waterless and now wooded.

Orbetello lies in its lagoon between Monte Leccio and Monte Argentario, it is the only large settlement and is rapidly expanding to fill its sandbar. The mountains are uninhabited, but scattered farms exist in the larger valleys.

The Lower Valley

The valley of the Albegna clearly divides into two parts. The transition from a mountain torrent to a mature flood plain is extremely rapid. This transition is illustrated by the profile of the river below. The river itself has a highly seasonal flow varying from 7m^3/s in winter to 0.6 m^3/s in high summer. The lower reaches of the river suffer from flooding in torrential periods of the winter and the banks are heightened with dikes. In contrast in the summer the upper reaches of the river have no flowing water above ground, but the lower river never runs dry.

The lower valley consists of a large low lying flood plain of triangular shape with its base on the coast and the apex at Marsiliana. The lowest parts of the plain consist of alluvial deposits but these are flanked to the north and south by fertile Pleistocene terraces which derived from material washed from the hills to the north and south. The soil is fertile but requires irrigation in the summer and drainage in the winter to grow the current dominant crops, tomatoes, sugar beet and sunflowers. Other common crops are grain in rotation with fodder crops, and olives which do not require irrigation. Olives are often cultivated together with grain and vines where the soil is well drained. The lowest fording

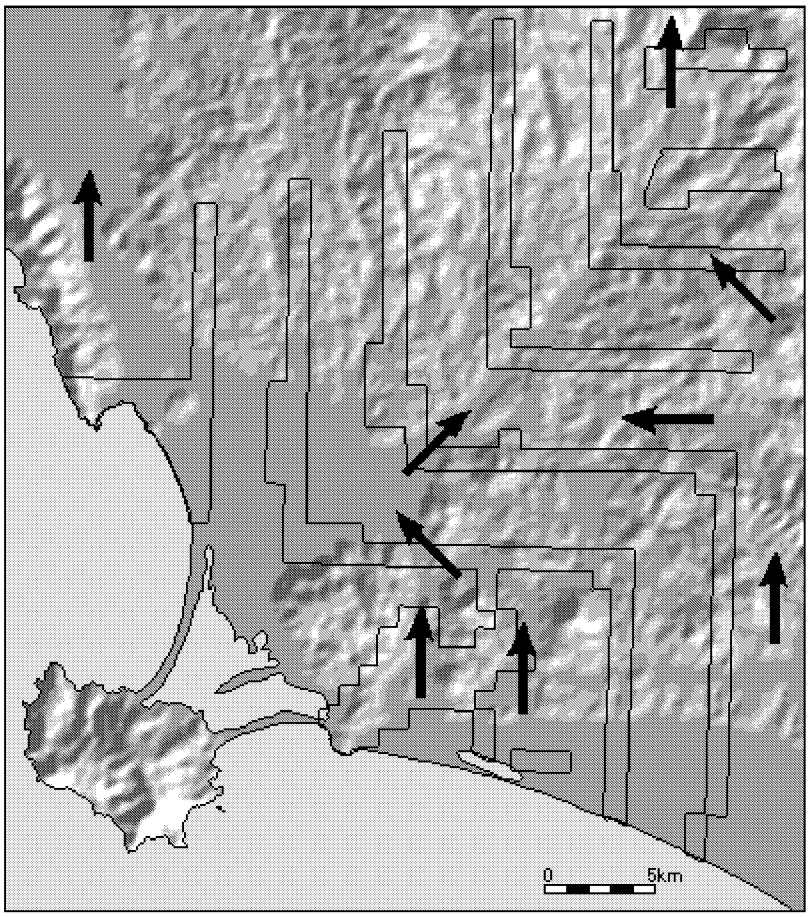


Fig. 1.1.5 Natural routes of communication

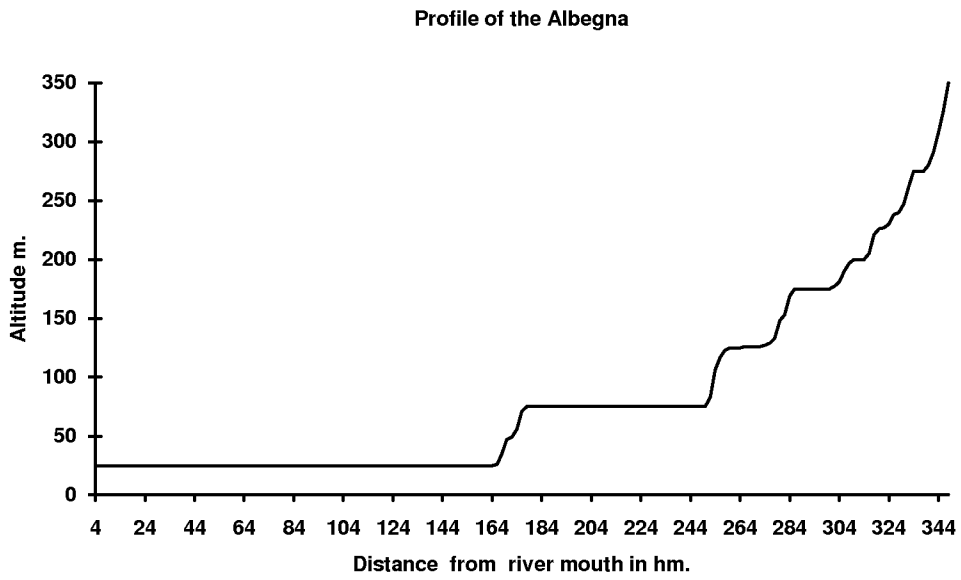


Fig.1.1.6 Profile of the River Albegna

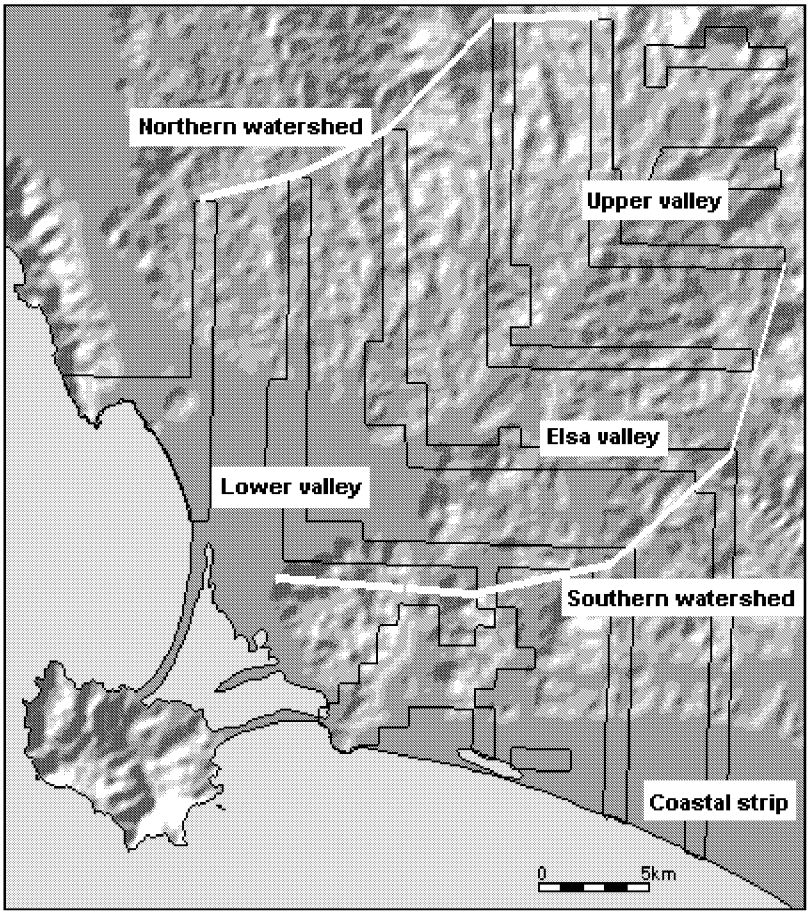


Fig.1.1.7 Natural regions

point of the Albegna lies below the hill of Marsiliana where the hills of the southern watershed of the valley project to the river and the Elsa flows into the Albegna. Upstream, the river flows between higher Pleistocene terraces and more hilly areas on both banks. The major settlement in this area lies in the northern part of these hills at Magliano in Toscana. These parts of the lower valley are farmed largely for grain, olives and vines and settlement consists of small hamlets or scattered farms.

The southern side of the lower valley is clearly demarcated by a wall of steep limestone hills: to the north the transition is more gentle. The lower valley is closed off by a range of Pliocene conglomerate hills, Poggio Ghiaccioforte and Poggio Riparossa.

The Elsa Valley
The southern affluents of the Albegna generally flow from east to west. The largest of these is the Elsa which flows through the conglomerate hills east of Marsiliana to join the Albegna. This narrow lower section of the Elsa valley widens to the east where there is a basin filled with fertile Pleistocene deposits which is largely under arable cultivation. This basin is fed by smaller streams which flow from the hills to the east and north to form the Elsa. The hills are wooded with steep slopes. A ridge running east-west forms the northern edge of the Elsa Valley and effectively divides the lower from the upper Albegna basin. At the eastern end of this ridge the town of Manciano lies perched on the watershed of the Albegna and Fiora rivers.

The Northern Watershed
To the north of the Albegna a series of streams run from the north to the south. This forms a highly dissected landscape of narrow ridges and deep valleys. Much of this area is wooded. Where deforestation has taken place soils are thin.

Some grain is grown here and there are areas of pasturage[3]. Settlement is thinly scattered in the country side and the main focus of occupation is the town of Scansano.

The Upper Valley
The landscape changes in the upper valley as the Albegna flows through a weathered plateau of travertine beds which overlay Pliocene sands and clays. The landscape varies from level fertile areas where good soils overlay the travertine to less fertile clayey slopes, subject to landslides. The upper valley, surrounded by wooded hills, forms a self contained basin dominated by the hill of Saturnia (294m) at its centre. To the north east the valley narrows rapidly and the river flows through a gorge in the

[3]Parts of the hills where slopes are not too steep are used for vineyards producing the excellent Morellino di Scansano, the best local vintage.

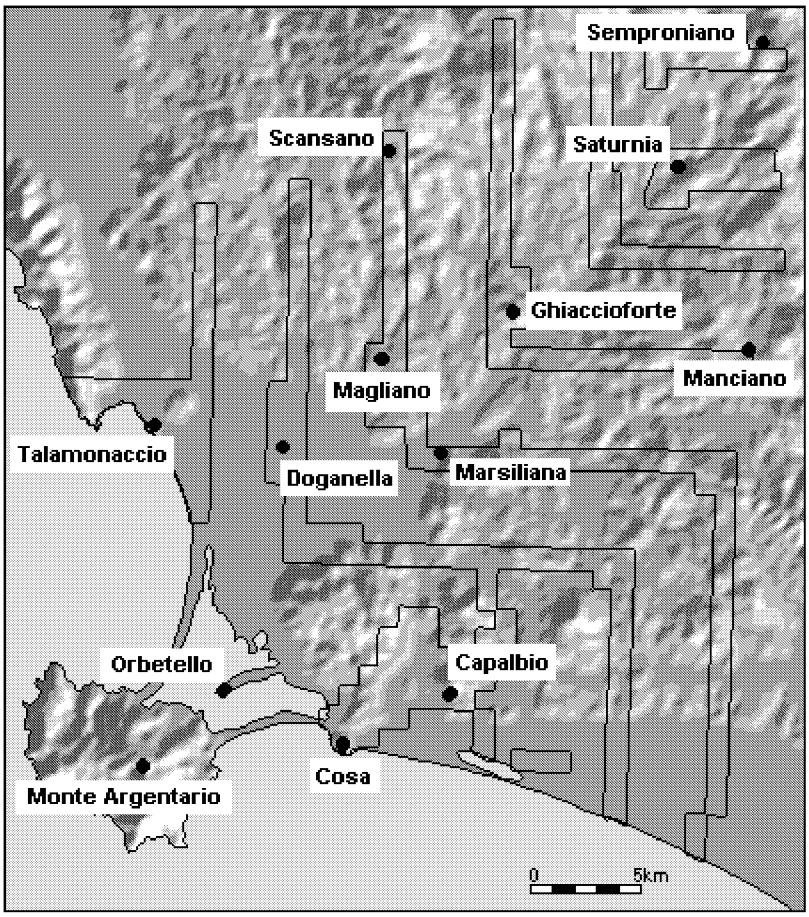


Fig.1.1.8 Principal places mentioned in the text

Jurassic limestone at La Rochette. To the east of this is a large travertine hill Poggio Semproniano (696m). On the north eastern slopes of this hill is the major settlement of the area Semproniano. However there are small villages in this area, for example at Saturnia, Le Capanne and Catabbio. Agriculture in the upper valley is mixed. Grain is grown in rotation with fodder such as alfalfa or maize. Vineyards are small but frequent, most fulfilling only local demand. Sheep are more common than in the lower valley and there is more pasture.

Above Semproniano the Albegna is little more than a mountain torrent and there is very little flat land. The only settlement of any size is Roccalbegna, a medieval fortress and colony built where the Albegna issues from a gorge on the slopes of Monte Labbro (1170m). Most of this mountainous area is wooded but there are some high pastures.

Altitude

The distribution of altitude through the valley is skewed towards the lower land below 50m above sea level. This is caused to a large extent by the size of the lower valley flood plain and lower terrace and the coastal strip. Areas and percentages are presented below (Section 3.3).

The important observations to make are that 45% of the land lies below 100m and 95% of the land lies below 450m above sea level. The sample transects (discussed below) represent this variation well and only the middle range of altitudes, between 250 and 550m above sea level are slightly under represented.

Slope

The slopes in the valley in the valley have been quantified using a Geographical Information System. The slope has been calculated as the maximum possible slope around each 100m^2 parcel of land. The calculation considers neighbouring parcels to the north, south, east and west of the target parcel. The maximum slope between these pairs of neighbours is calculated and assigned to the target parcel. These slopes were then classified according to a standard soil survey manual (USDA, 1951) into the following classes 1) negligible, 0-8%, 2) slight, 8-16%, 3) moderate, 16-25% and 4) strong >25%. The areas and percentages of each slope category are presented below.

The majority of the land in the valley has gentle or no slope, over 55% of the land has a negligible slope and nearly 90% has a less than moderate slope. The sample transects closely match this apart from the steep category of slope which was not suitable for field survey.

Aspect

The average aspect of a 100m^2 parcel of land is calculated in the same manner as the slope except that the direction the slope faces rather than the angle of slope was recorded. The aspect has been classified, into the following classes, north to north east facing, north east to east facing, east to south east facing, south east to south facing, south to south west facing,

south west to west facing, west to north west facing, north west to north facing and none, that is level.

The largest class is no aspect (23%), reflecting the extent of the coastal plain, flood plain and associated terraces. However, within the valley as a whole there is a slight tendency for land to have a southerly to westerly aspect. If the land were evenly distributed among the various possible aspects each class would have 11%, but the two classes between south and west both contain over 13% of the land and other aspects are less common. The sample transects closely reflect the distribution of aspects throughout the valley.

Landscape change

Extensive geomorphological studies have not been undertaken as part of the survey work. However, a pollen core excavated in the Lago di Burano indicated a build up of 1.70m of peat since the 1st century AD (Carandini and Fentress in press). In the middle valley roman ceramics were observed eroding from stratified sediments in the bank of the river Albegna 2.40m below the level of the current ground surface. This slight evidence would seem to indicate that the Roman Imperial period and post-Roman period were periods when alluvial deposits were being laid in the valley bottoms. These may well be the younger fills of Vita-Finzi (1969), but only future research will tell if this phenomena is as widespread as it seems to have been in south Etruria (Potter 1976, 24-28). What the observations do indicate is that we should be cautious about suggesting the prehistoric and Etruscan settlements did not exist in the valley bottoms as they might well be hidden from surface survey by alluvial deposits.

Chapter 2. History of the Studies

2.1 Previous Work

The earliest recorded archaeological activity in the survey area was in 1824 when Alessandro François visited the area and observed the then standing walls of Doganella and even excavated some foundations of the walls. It is not surprising that such an eminent archaeologist should have visited the area as he was excavating at nearby Vulci and at Roselle during this period. François also reports well preserved tumuli in the area, some of which he excavated, but the results were not rewarding as no highly prized Greek vases were discovered. François is rather vague about the location of these tombs and it is even possible that they were actually in the area of Magliano and not close to Doganella (Perkins and Walker 1990, 22). In any case, François was so unimpressed by his findings that he did not even publish them. It was not until some 27 years later when Dennis published an account of the rediscovery of the city at Doganella (Dennis 1848) that François revealed in a letter to the Instituto di Correspondenza Archeologica in Rome that he had earlier visited and excavated at the site (François 1851, 6-7).

François recognised the site at Doganella as a city and declared that it was the city of Telamon for this was a name known from ancient literature, particularly as the location of the landing of Marius in 87 BC (Plutarch Marius 41; Harris 1971, 206-8), and the late medieval Sienese settlement of Talamone lay nearby. At this stage in the development of Italian archaeology one of the major goals was to identify the locations of places mentioned in classical texts, and another site which attracted attention was Cosa. The debate concerned whether an Etruscan Cosa mentioned by Vergil in the Aeneid (X,165) lay on the site of Orbetello, which had preserved polygonal walls of clear antiquity and necropolises or on the hill of Ansedonia to the south the site of Roman Cosa with the standing remains of its Arx (e.g. Dennis 1878, 245).

Until the middle of the nineteenth century interest in the area was largely confined to antiquarians and members of the *Instituto di Correspondenza Archeologica* who exchanged information about the latest finds (François 1849; 1851; Benndorf 1867; Braun 1840; 41). However, by the early part of the 19th century a wider interest in the Etruscans had grown in Europe (Morigi Govi 1992; Haynes 1992; Colonna 1992). In Britain the Etruscans were brought to the attention of the British public by the publication of an enthusiastic travelogue by a clergyman's adventurous wife (Hamilton Gray 1840) entitled 'Tours to the sepulchres of Etruria in 1839'. This had been inspired by a major exhibition of Etruscan finds opened in Pall Mall, London, in 1837 which was a great popular success. The objects displayed, and the facsimiles of the tombs in which they were displayed, were purchased by the British Museum in 1838 (Colonna 1992 ,334-5). Mrs. Hamilton Gray's book may have been a public success but it was not well received in academic circles. It was condemned in academic circles as too influenced by Italian nationalism, poor erudition and lack of detail. It did however, inspire George Dennis to visit Etruria and produce a better account (Rhodes 1973, 52-6). The resulting two volumes (Dennis 1848) which are still an indispensable guide to ancient Etruria, were based on classical scholarship and visits to most of Etruria. When Dennis visited the Albegna Valley in the 1840s he was able to report a number of sites (Dennis 1845, 229-46; 1878, 268-9). He was told the story of the destruction of the walls of Doganella for road building materials and was shown a plan of the walls made at the time (Published by Michelucci 1984, Tav. 1a). Dennis was impressed by the size of the city and declared it to be one of the Twelve Cities of Etruria, Vetulonia, which had not been located by this time. Dennis' description of what he saw and what he was told still forms an important source for the city as there is now no standing trace of the walls (Perkins and Walker 1990).

Dennis also reports the discovery of painted tombs near Magliano (Dennis 1845, 231; 1878, 267; Braun 1840, 147; 1841, 22). One of these was probably the tomb located by the survey (MAG20.0) and investigated in the early part of this century (Grassini 1934; Messerschmidt 1926; Minto 1935, 39). A nineteenth century sketch of these paintings, discovered in the archives of the Soprintendenza, is the only record of the tomb paintings which are now illegible (Michelucci 1984, Tav. IVc). Later in the century an inscribed lead plaque was also discovered near Magliano (Milani 1893). Dennis also visited Talamone and speculates that there was an Etruscan landing place in the area (Dennis 1845, 232-3). The other site which attracted Dennis was Saturnia. Here he reported the standing remains of the Porta Romana, one of the few extant remains of the Colonia. However, he was more interested in the constructed chamber tombs of the cemetery at Pian di Palma, particularly as they reminded him of megalithic cairns found in Britain (Dennis 1878, 283-4). The circumstances of the discovery of these tombs is not known, but the fact that they are built on a sterile outcrop of travertine and that there has been no significant build up of overburden suggests that they would have been known to inhabitants of the area. The tombs were subjected to excavation by Mancinelli at the end of the nineteenth century (Pasqui 1882, 57) and have recently been reinvestigated (Michelucci 1982).

The archaeological finds reported in the latter part of the nineteenth century establish a pattern of discovery which was continued in the earlier part of the next century; of local landowners taking an interest in the archaeological discoveries made on their lands. A good example of this is the DeWitt family who owned areas of the peninsular of Orbetello and excavated an undetermined number of tombs on their property. The first discoveries were made in 1820 and further excavations were reported in a piecemeal fashion. A series of late Etruscan chamber tombs seem to have been found, bodies were buried in wooden coffins, not the more typical stone sarcophagus, and items of gold jewellery were found with some of the depositions. The exact location of these tombs is not now known and it seems likely that they have been swallowed up by post-war building of new suburbs for Orbetello (Benndorf 1867, 147-8; Dennis 1878, 242; François 1849, 67; Micali 1844 109, Tav.XVII.10; Milani 1885, 242-5).

Likewise, a cemetery was excavated at Talamonaccio in 1876-7 by the Marchese Vivarelli Strozzi (Fiorelli 1877, 244; 1878, 129) and in 1888-92 remains of a temple were discovered during construction work (Gamurrini 1888, 682; Milani 1892, 108). These two excavations also produced two hoards of bronzes (Michelucci 1985a, 44-7). An indirect effect of this level of archaeological activity in the Albegna Valley and elsewhere in the Maremma was the establishment of a museum in the provincial capital of Grosseto. The museum originated from the donation of the Chelli library and collection of art and artefacts in 1865, and acquired finds from the Province during the last decades of the nineteenth century (Mazzolai 1984, 11). Today the museum houses the most important collection of local antiquities (e.g. Donati and Michelucci 1981).

Similar dilettante excavations took place in the early part of the twentieth century and the most spectacular finds were made by Don Tommaso Corsini in his estates around Marsiliana. He excavated the cemetery at Banditella (Marsiliana) with its spectacular Orientalising burials. Corsini had the good fortune to enlist the skills of Antonio Minto to publish the results of the excavations in a privately printed monograph in 1921. This was the first thorough archaeological publication to emerge from research in the area and marks a turning point in the local archaeology (Minto 1921). The publication is still valid, although some of the discussions are now dated, and its details are used further below.

Minto maintained his interest in the area and went on to publish the results of excavations in various cemeteries around Saturnia (Minto 1925). Later he also published an article on the Etruscan tombs around the Roman Colonia of Heba (near Magliano), which he believed to have been founded on the site of an Etruscan city (Minto 1935). These publications by Minto form a fundamental reference point for the study of burials in the Albegna Valley. Where the material merited it, the publications were thorough and meticulous. They are still of great use today. The tombs published by Minto usefully span the seventh to fifth centuries.

Another significant achievement of a landowner in the early part of the century was the formation of a large collection of predominantly Etruscan antiquities by the Ciacci family of Saturnia. This collection was assembled from finds made in the upper valley and neighbouring areas in the Fiora Valley. Unfortunately precise provenances for the material were not recorded and so it is not possible to relate the artefacts with particular necropolises. The collection, now in the Museo Archeologico della Maremma in Grosseto has been published by Donati and Michelucci (1981) and although de-contextualized the ceramics provide a useful repertoire of forms and fabrics for the upper valley.

In the first half of this century further chance finds were made. Near Talamone some archaic temple terracottas were discovered during the construction of a pumping plant (Cappelli 1930). Various building work also revealed remains, for example in Orbetello (Raveggi 1936, 408).

Overall the first half of the twentieth century witnessed a reduction in active research into the Etruscan period in the Albegna Valley. This phenomenon is not limited to this area and was largely due to the prevailing political conditions in Italy, where the rise of fascism encouraged the investigation of Roman classical antiquity above all other periods. Nevertheless the work which was done in Etruria during this period was more systematic than previously. The figure of Antonio Minto dominates the archaeology of the area but the type of work he instigated, investigations of the Etruscan archaeology of small areas associated with urban centres such as Magliano and Saturnia (Minto 1925; 1935) was part of a broader shift in the focus of research. This was pioneered by Bianchi Bandinelli at Sovana and Chiusi (Bianchi Bandinelli 1925; 1929), and led to the production of a series of maps of archaeological finds based on the 1:100 000 military maps of Italy. Unfortunately the Albegna Valley was not fully covered and only the north western area, including Saturnia was published (Bianchi Bandinelli 1927). This map represents the most coherent publication of the distribution of archaeological finds from the area previous to the publication of the results of the Albegna Valley - Ager Cosanus survey. Find spots are precisely located where possible, and sites are divided into chronological periods and structural types. These publications form the best context for the survey, in that they cover neighbouring areas. However, they are not based on systematic fieldwork but rather bibliographic research, chance finds and excavations.

The post-war years have witnessed a change in the nature of archaeological research in the valley. Following 1944 there were large scale changes in the patterns of land holding and most of the large estates were either reduced in size or broken up entirely. This was followed by rural settlement programmes that have created a network of small farms. In addition much of the low lying coastal lands had been drained in the Fascist era. Before then much of the coastal strip was lagoonal and infested with malaria, Dennis eloquently described the effects of the disease which he saw at first hand at Talamone *'The place is squalid beyond description, almost in utter ruin, desolated in summer by malaria, and at no time containing more than some hundred and fifty befevered souls - febbricitanti, as the Italians say - on whose heads Heaven has rained 'The blistering drops of the Maremma's dew''* and *'...almost deserted in summer, and the few people that remain become bloated like wine skins, or yellow as lizards.'* (Dennis 1878, 236, 243)[4].

These dramatic changes have transformed the landscape and have also affected the archaeology in a variety of ways. The increase in rural population and the extension of mechanised agriculture have increased the rate of discovery of archaeological materials. However the demise of the great estates has caused the virtual cessation of locally based excavation and collection of artefacts. The increase in the density of rural population, along with increasing economic aspirations has led to the development of intense tomb

[4]This is a shocking contrast with the present. Talamone has a nice concrete marina for the yachts of the wealthy and two excellent seafood restaurants (the one further up the hill is better). It does however have probably about the same number of permanent residents.

robbing activity in some parts of the valley where chamber tombs are known to exist. This has led to an increase in the number of tombs known but has caused much damage to the archaeological record (Kennet 1984).

These changes must be put in the context of the development of a modern archaeological service in Tuscany, the Soprintendenza Archeologica della Toscana. This centrally funded part of the Ministry for Cultural and Environmental Assets has legal responsibility for the protection of the archaeology of the area and also regulates archaeological research in the region. Establishment of this institution has led to an increase in the rate of reported archaeological discoveries, the complete cessation of dilettante excavation by landowners and the regular detection of unauthorised clandestine excavation. The Soprintendenza has very little funding for research activities and most of its resources are concentrated upon the preservation and recording of known sites, along with any emergency excavations which may be necessary from time to time. A fair number of this kind of small excavations have taken place in the Albegna Valley, but to date few have been published in anything but a summary way. An exception is a recent publication of an investigation of the tumuli at Pian di Palma and excavations in the village of Saturnia (Michelucci 1982) and excavation of some tombs near San Donato (Michelucci 1991c). The territory of the Soprintendenza is divided into small areas and an Ispettore (Inspector) is appointed to each area. Thee inspectors who currently care for the Valley and are responsible for much of the recent research and publication which has taken place.

Reorganisation of the Soprintendenza also included changes in the structure of the regional museums service. The general tendency, continued from the earlier part of the century, has been towards centralisation, in Florence. However, as the result of a local initiative the museum in Grosseto was re-housed and permanently established as the Museo Archeologico e d'Arte della Maremma in 1975 after fifty troubled years of neglect and damage from floods and war (Mazzolai 1984, 11). The museum is now a flourishing centre of research and exhibition under the direction of Dott.ssa Mariagrazia Celuzza, with a well presented collection of finds from the province. Other local initiatives have fared less well, for example the local antiquarium at Orbetello has been closed and its holdings transferred to Florence (Santangelo 1954).

In addition to the work of the Soprintendenza a number of international archaeological missions have also worked in the area. Between 1948 and 1972 the American Academy in Rome excavated the site of Cosa. The excavations revealed much of importance to the history of the Colonia but did not reveal any trace of Etruscan settlement (Brown 1980). These excavations have now restarted under the direction of Dr. Elizabeth Fentress with an emphasis on the late Roman remains (Fentress *et al.* 1991) Another foreign excavation took place in the 60's and seventies when the hill of Talamonaccio was reinvestigated. Here remains of a third and second century BC temple were excavated by a Swiss team (von Vacano 1975; von Freytag 1977). Although the site was occupied in the Etruscan period these excavations did not reveal coherent traces of the Etruscan period settlement. During the seventies and early eighties a second minor centre in the valley was also investigated, Ghiaccioforte, in this instance by a team from the University of California at Santa Barbara (Del Chiaro 1976) and these excavations have subsequently been continued by the Soprintendenza (Rendini 1985). Canadians and Italians performed an underwater survey of the coastline of the valley (Bronson and Uggeri 1970) but did not detect any Etruscan remains.

In the late seventies the University of Siena took an interest in the area and Professor Andrea Carandini initiated the excavation of a Roman villa at Settefinestre (Carandini 1984). This marked the beginning of the most intensive period of archaeological investigation of the area. Since then an American team has performed a small survey around Cosa (Dyson 1978), and the Albegna Valley - Ager Cosanus survey a project of the Universities of Siena and Pisa and a variety of British institutions has systematically surveyed approximately one fifth of the surface area of the valley (Carandini and Fentress eds. in press) and the Etruscan city at Doganella (Perkins and Walker 1990). The project has also excavated an Etruscan farm (Attolini and Perkins 1992) and a Roman Farm (Celuzza 1985). It is this research which has provided the new evidence presented in this study.

During the same period the Soprintendenza has been active and a number of Etruscan sites including Doganella, Saturnia, and Ghiaccioforte have been investigated by excavation (Michelucci 1982; 1985b. Rendini 1985,) although detailed reports are still awaited.

This increase in archaeological activity is beginning to yield a growing number of publications but most of the projects have operated independently from one another an there has been little co-ordination of research goals. In 1976 the Congress of Etruscan and Italic studies focused on the area of Vulci and a number of papers considered problems of the general settlement history of the Albegna Valley (Camporeale 1977; Colonna 1977; Cristofani 1977). However these papers were presented before any systematic field survey had been performed and were derived from a consideration of the chronology and spatial distribution of the cemeteries which had been discovered by that time. These studies were the first attempts at a regional history of the Etruscan settlements in the Albegna Valley. Similar accounts have appeared in a more accessible form in 1981 (Cristofani and Michelucci, 1981). All of these reconstructions can now be seen as incomplete since the significance of the city site at Doganella was not fully appreciated at that time.

In 1985 as a part of the 'Year of the Etruscans' project an exhibition was held at Orbetello. This presented preliminary reports of the work of the Albegna Valley - Ager Cosanus survey and of Soprintendenza excavations in the Albegna Valley and neighbouring areas. The exhibition was titled 'The Romanization of the Territory of Vulci' and as such it concentrated on the establishment of the Roman settlement patterns in the last three centuries BC. The catalogue does contain reports of research into the later Etruscan period but

the emphasis is clearly laid upon the Romanization (Carandini 1985).

Archaeological research continues and the valley still produces surprises. In recent years a new chamber tomb with well preserved Orientalising wall paintings was discovered near Magliano (Rendini 1989).

2.2 The fieldwork

The majority of the fieldwork performed for this for this study was executed as part of the Albegna Valley - Ager Cosanus survey. This project grew from the excavation of a Roman villa at Settefinestre. The excavation was a joint Italian - British project involving many staff and students from many institutions. The excavation was co-ordinated by Professor Andrea Carandini (Carandini 1985b). Towards the end of the excavation it became apparent that despite the remarkable results of the excavation, even the well preserved remains of a single villa could not provide a complete understanding of Roman agrarian history. In order to broaden the base of evidence some field survey was undertaken in 1977-8 in the Val d'Oro around Settefinestre (Carandini and Settis 1979, 35-7, 101-3; Celuzza and Regoli 1985, 60-61). In the following year this work was continued and some experimental survey started in the lower Albegna valley. This area was investigated as the villa at Settefinestre had emerged as an inappropriate focus for a survey and the basic unit of investigation became the Ager Cosanus.

The north western boundary of the territory of Cosa has been reconstructed from medieval diocesan boundaries and natural features such as the rivers Albegna and Elsa (Cardarelli 1924-5, 17) and so the lower part of the Albegna valley, to the confluence with the Elsa, was included in the survey area. This extension of the field walking raised the possibility of a comparison between the territory of Cosa and its neighbouring colonies Heba and Saturnia which would yield important results.

By the end if 1980 the survey had discovered sites from all periods and it was realised that a survey area defined by Roman territorial divisions would not be appropriate for all periods. Therefore the area to be surveyed was redefined as the geographical limits of the Albegna Valley including the coastal strip between the Rivers Albegna and Tafone. This area formed the smallest geographically coherent unit which encompassed the territory of Cosa, and it also contained the territories of two further Roman colonies. This choice of survey area also had the benefit of containing the widest possible range of geographical variation, from the source of the Albegna to the coast. This expansion of the research aims of the project transformed the survey from the study of a Roman villa to the survey of a region.

Survey of this area, over 1,000km^2, would have been impractical so a sampling strategy was devised to investigate a representative part of the area. The scheme chosen consisted of a 20% stratified sample of the land area of the valley. This consisted of a series of 1 km wide transects regularly spaced through the area at intervals of 4km. The transects were arranged to run south from the northern watershed to the river Albegna and then turn through 90° to run east to the eastern watershed. Where a transect met the watershed between the Albegna and the coastal plain it turned again to run south to the sea. This geometric scheme was particularly suited to the topography of the valley since, due to the underlying geology, affluents north of the Albegna tend to run north-south, those south of the river tend to run east-west and those in the coastal plain run north-south. Thus the transects run parallel to the water courses. The position of the transects was carefully manipulated so that the regularly spaced transects covered parts of the sites of the Roman colonies of Heba and Saturnia. This overall scheme was maintained throughout the duration of the project. Modifications were made to take account of various archaeological and geographical features, for example the transects were widened around the Etruscan and Roman urban centres so that the complete area of the settlements and their immediate environs were fully investigated, and areas of land reclaimed from lagoons in this century were avoided (Cambi and Fentress 1988, 169-72). In the upper reaches of the valley the 'L' shaped transects were replaced with east-west transects as sample areas parallel to the watercourses were impractical to survey due to the heavily dissected landscape. In addition a block of 4 km^2 around the Etruscan farm excavated at Podere Tartuchino, adjacent to a transect, was also surveyed to investigate the settlement pattern around the farm.

In 1980 a standardised system of recording surface scatters was developed to ensure that consistent information was recorded about each surface scatter. The system was based on that developed in the early survey work (Carandini and Settis 1979, 101-3 Panello 4). The system used is hierarchical. The primary item recorded by the system is a topographical location where archaeological material was found (Sito in Italian). This 'Sito' ('situation' is a better translation than 'site') is identified by an abbreviated reference to a 1:25,000 Instituto Geografico Militare map sheet by a code of two or three letters: e.g. SD = San Donato, MAG = Magliano in Toscana[5] followed by an integer e.g. SD23. The integer has no significance beyond being a unique identifier for the location, although in many areas the numerical sequence is coincident with the order in which the archaeological sites were identified. If required the location number was sub-divided into units to represent different spatial locations of surface scatters within the topographic location or chronological divisions discovered in the material[6]. These sub-divisions are called UTs (Unità Topografica) and are represented as pseudo-decimals[7] e.g. SD23.2. A location with only a single scatter or a single chronological period present is always presented with a UT of 0, e.g. SD23.0. This system of numbering is used throughout this study.

[5] The full list is: PS = Porto San Stefano, PE = Porto Ercole, ORB = Orbetello, CAP = Capalbio, PF = Pescia Fiorentina, PR = Pescia Romana TAL = Talamone, SD = San Donato, MAR = Marsiliana, LC = La Campiglia, COL = Collechio, MAG = Magliano in Toscana, FP = Fattoria Pomonte, MAN = Manciano, MOO = Montorgiali, SC = Scansano, SAM = Sampronianо and ROC = Rocalbegna.

[6] With hindsite the subdivision of a location upon two different criteria - space and/or time has proved undesirable in a computer database management system.

[7] i.e. SD23.1 is not equal to SD23.10.

The record sheets for the surface scatters recorded details of the location of the scatter including a grid reference and access roads. The landform, geology, soil type, land use, vegetation and nearest water source were all recorded, along with a description of the finds, dimensions, dating, drawings and photographic records. In addition a topographic sketch of each scatter was made. A final category of information recorded was the method of field walking used, weather and light conditions, the time and date and the team responsible. An abridged version of these records containing only sites with Etruscan period finds is presented in appendix 1[8]. In addition to the detailed descriptions of the locations where archaeological material was found, all of the fields walked, regardless of the presence of archaeological material, were recorded on the topographic maps.

In 1981 field walking of this sampling scheme began and intensive survey continued on an annual basis until 1986, when all of the samples had been systematically surveyed. The only area not covered was the mountainous northernmost transect which was not amenable to field walking. Some areas outside of the transects were also investigated on a judgmental basis.

Field Methodology

The intention was to sample the whole of the land surface within the sample transects. Practically this was not possible as some areas were unsuitable for systematic field survey. Typically these areas were dense woodland, built up areas, or enclosed areas with uncooperative proprietors. In other areas a variety of conditions were encountered ranging from fields with mature crops, pasture, stubble or fallow, for example to ideal conditions, freshly ploughed fields after a shower of rain. The conditions encountered at each site are listed in appendix 1. Where ever conditions allowed, areas within the transects were line walked at intervals of 5m. The interval was increased to 10m in areas of poor visibility. Typically a transect was surveyed by a team of four in a single season, usually in September which is the ploughing season and the time when cultivated vegetation is at its lowest.

When line walking detected a surface scatter of material, the line walking was suspended and a grab sample was taken of artefacts from the scatter. Care was taken to ensure that the limits of the scatter were identified and that the whole area of the scatter was investigated. If the scatter appeared to be spatially articulated into discrete sub-scatters, each was individually investigated and the artefacts from each were kept separate. The topographic location of each scatter was recorded on the standard form and the details of each scatter on another and a sketch map of the scatter was drawn. The collection of artefacts made at each site was sorted in the field. The most common find was fragments of roof tile, these were sorted and one example of each shape and of each fabric was retained. The pottery was sorted and 'diagnostic' sherds, i.e. rims, bases, handles, decorated sherds, and all fine wares were retained. Other finds such as fragments of *dolium* were treated in a similar way, but in the absence of diagnostic sherds a body sherd was retained. All finds such as nails or coins or glass were retained. A single example of each type of building material, other than local stone e.g. marble or brick, was retained. Animal bone was not kept. If ever there was doubt as to the significance of a particular find the policy was to keep it for later sorting. Finds were initially processed at the survey bases. Materials were washed, dried, and further sorted using the same criteria. Brief lists of finds were made and then artefacts were bagged for future specialist study.

The Etruscan finds were studied at various intervals between 1984 and 1989. In 1984 a first tranche of the finds from Doganella were studied by myself and Derek Kennet at the University of Siena. Derek Kennet also catalogued the *pithoi* from the survey in 1988. The remainder of the Etruscan finds were studied by myself at the University of Siena. The black gloss wares were studied by Roselle Colomba of the University of Pisa. All of the finds not published in this study, in Perkins and Walker (1990) or Attolini and Perkins (1992) will be published in the forthcoming second volume of the survey report. The methodology for the study of the Etruscan ceramics is detailed in Perkins and Walker 1990 and further below.

Excavation

As the survey work progressed it became apparent that the villa was only a single component of the roman settlement pattern and that the field survey data contained a wealth of evidence for the detailed reconstruction of the settlement history of the area. Therefore, to complement the excavation of the villa at Settefinestre a small republican farm was excavated at Giardino Vecchio in the Val d'Oro by Dott.ssa M.G. Celuzza and Dott.ssa E. Regoli in 1982. The farm has not yet been fully published but there is a summary in Celuzza 1985.

The survey also identified a rich and complex settlement pattern for the Etruscan period and in order to provide a greater depth to the surface archaeology and to provide grounds for comparison with the Roman data a small Etruscan farm was excavated in 1985-6 at Podere Tartuchino. The excavation was directed by Dott.ssa I. Attolini and P. Perkins and published by P. Perkins in 1992 (Attolini and Perkins 1992). The results of the excavation are discussed below.

Analysis of the results

All of the data recovered by the survey was entered into computer databases to facilitate listing, sorting and searching[9]. Without the application of these systems the analysis of the survey results would have taken much longer and may not even have been possible. In addition to the databases of sites and finds a new class of software has also been employed the Geographical Information System (GIS), which is a computer based mapping system developed originally for oil prospecting and military use (Kvamme 1992; Gaffney and Stancic 1992). This is the first major field survey to use this technique for analysis. The GIS provides a means of managing spatially referenced data, so maps can be

[8]The full details for each site will be published in the survey report (Carandini and Fentress in press).

[9]Site data was initially entered into a Commodore 64 computer running Superbase. This was found to be inadequate and data was transferred to IBM PC compatibles running dBase.

manipulated at the same time as other information. So for the survey there are two principal databases, one for sites and one for finds, these are linked together and with a set of electronic maps. The maps were digitized from 1:100,000 topographic maps to make an electronic map with a cell size equivalent to a 100x100m (1 ha) parcel of land, so any of the archaeological sites may be located to within 100m from the maps. These maps can then be electronically manipulated. It becomes possible to query the data from a spatial view point, either along the lines of 'show me all the values of variables at point x,y' - the result could be a list of finds from a site plus all the environmental and geographic data recorded, or 'show me a map of all the places where both Attic red-figure and bucchero are found'. A GIS provides the ability to quickly and accurately create distribution maps of either single or combined variables.

Most GIS systems are provided with a suite of statistical functions so that distributions can be quantified in various ways. This enables the formal examination of perceived patterns and relationships between spots on maps. Such analyses are not in themselves new (e.g. Hodder and Orton 1976), but the GIS makes such studies more practical and achievable with consistent results. The system used in this study is called Idrisi and is produced by Clark University Graduate School of Geography.

For the archaeologist perhaps the most exciting thing which a GIS can be used for is to explore data. Using traditional means (pencil and paper) plotting a distribution map of different finds (let alone combinations of finds) from a large survey is the work of days, and can be very prone to errors, even with the help of a database. Using a GIS such a task becomes trivial. This in turn enables questions to be asked which would previously have been impractical. The great strength of such systems is that they unlock a great deal of the potential which survey data contains.

As with any new technique there are always minuses to accompany the plusses. In this case the major drawback with the technique is the length of time it takes to create the original map in a machine readable form. But once the data has been entered and verified the subsequent manipulation of the data is rapid. The computer techniques do not on their own solve any of our archaeological problems but they do improve data handling and visualisation capabilities. Computerising spatial data and producing sophisticated maps is no substitute for thought. This study is not explicitly about the application of these new techniques, but it is an example of their application.

Chapter 3. The Settlements

3.1. Nature of the settlements

During the fieldwork a classification of the surface scatters encountered was jointly developed by the survey team. The criteria used for classification of each contact with the archaeological record derive from the nature of the evidence observed or collected at each location. Criteria may derive from both the overall nature of the archaeological material, for example a surface scatter of artefacts, or from individual finds made at a location, for example a ceramic waster. The classification of the remains is polythetic so that no single criterion is necessary to classify each recorded location of archaeological material. Each of the classifications strives to take account of the possibilities of differential preservation of sites and also the differing degrees to which a site may be made visible by ploughing or other erosion.

The size of a scatter may have an indirect relation to the original size of a settlement; for example, a small structure might be the origin of a large scatter if subjected to repeated ploughing on sloping ground or a large structure may only produce a small scatter if it is deeply buried and lightly ploughed. The farm excavated at Podere Tartuchino is a case in point, in 1983 the scatter covered 300m^2 but before excavation in 1985 the scatter covered only about 50m^2. However, on both occasions the scatter qualified as a house by both criteria described below.

Encouraged by results from other surveys, a hierarchy of settlements has been established similar to that established for the Roman period (Dyson 1978; Potter 1979; Celuzza and Regoli 1982; Carandini and Fentress in press). The following is an exposition of, and commentary upon the settlement classification.

House

Criterion 1: A surface scatter smaller than 1,000m^2 containing a loom weight, slag, a grinding stone or *pithos* associated with roof tile.

Comments: The size of the scatter is limited to differentiate between a house and a village. Each of the classes of artefact are evidence of food preparation or domestic crafts, *pithoi* are required to be associated with roof tile because they have also been found in tombs.

Criterion 2: Consistent and continuous scatter of roof tile and/or pottery and/or building stone larger than 25m^2 and smaller than 1,000m^2.

Comments: The size of the scatter is limited to differentiate a house from a tomb site and a village site. The association between different types of finds is expressed as and/or in order to allow for the cases of, for example, a large scatter of roof tile where no pottery was found, or a house which was not roofed with tile.

Discussion: This class of site was poorly understood before this research. In the 1920's when the archaeological map of Italy was being compiled the existence of small Etruscan settlement sites was not recognised. For example the key of the Siena sheet (Bianchi Bandinelli 1927) has eleven different symbols for different types of tomb and none for a rural settlement, the nearest the key comes is '*rovine indeterminate*' (indeterminate ruins) or '*materiale sporadico*' poorly translatable as scattered material but closer to the English concept of 'stray find'. The same key is used for other maps covering Etruria. In the 1920's Etruscan settlement was conceived of as consisting solely of cities and cemeteries. This lack of recognition of rural settlements caused problems in interpreting the distribution of tombs around Chiusi (Bianchi Bandinelli 1925, 435-7). Bianchi Bandinelli identified some tombs at more than 3 km from Chiusi, and this was considered as too far from the city for the tombs to be an urban cemetery. Only one site was considered to be a suburban centre and this was not sufficient to account for the tombs (1925, 349). His interpretation of the pattern was that the location of the tombs was determined by the land holdings of urban patrician families and that the tombs on the rural estates were also used by their clients. This is a convoluted explanation and a rural settlement pattern would provide a more straightforward explanation of the location of the tombs. Systematic survey has not been attempted in the region of Chiusi, but it would seem probable that there is a rural settlement pattern in the territory of the city, just as there is in all other areas which have been systematically investigated.

When large scale field survey work was conducted in South Etruria in the 1950's and 60's isolated Etruscan rural settlements were recognised for the first time. Over three hundred such sites were discovered in the various parts of the South Etruria Survey, yet even in 1979 Potter was direct enough to say 'None of these sites has been excavated and we know nothing of their layout, architecture or economic function.' (Potter 1979, 76). Survey work in the Albegna Valley and Ager Cosanus also recognised an Etruscan rural settlement pattern but here the problem was addressed and the excavation an Etruscan rural settlement at Podere Tartuchino was undertaken (Attolini and Perkins 1992).

Two seasons of excavations at Podere Tartuchino uncovered the remains of a substantial building with a large area of courtyard to the front. There were two distinct phases of building at the site. In the first phase of occupation, from the late sixth to the early fifth centuries B.C., the farm was simply a single large room constructed of stone walls bound by clay, with a timber portico on the southern side (Fig.3.1.1).

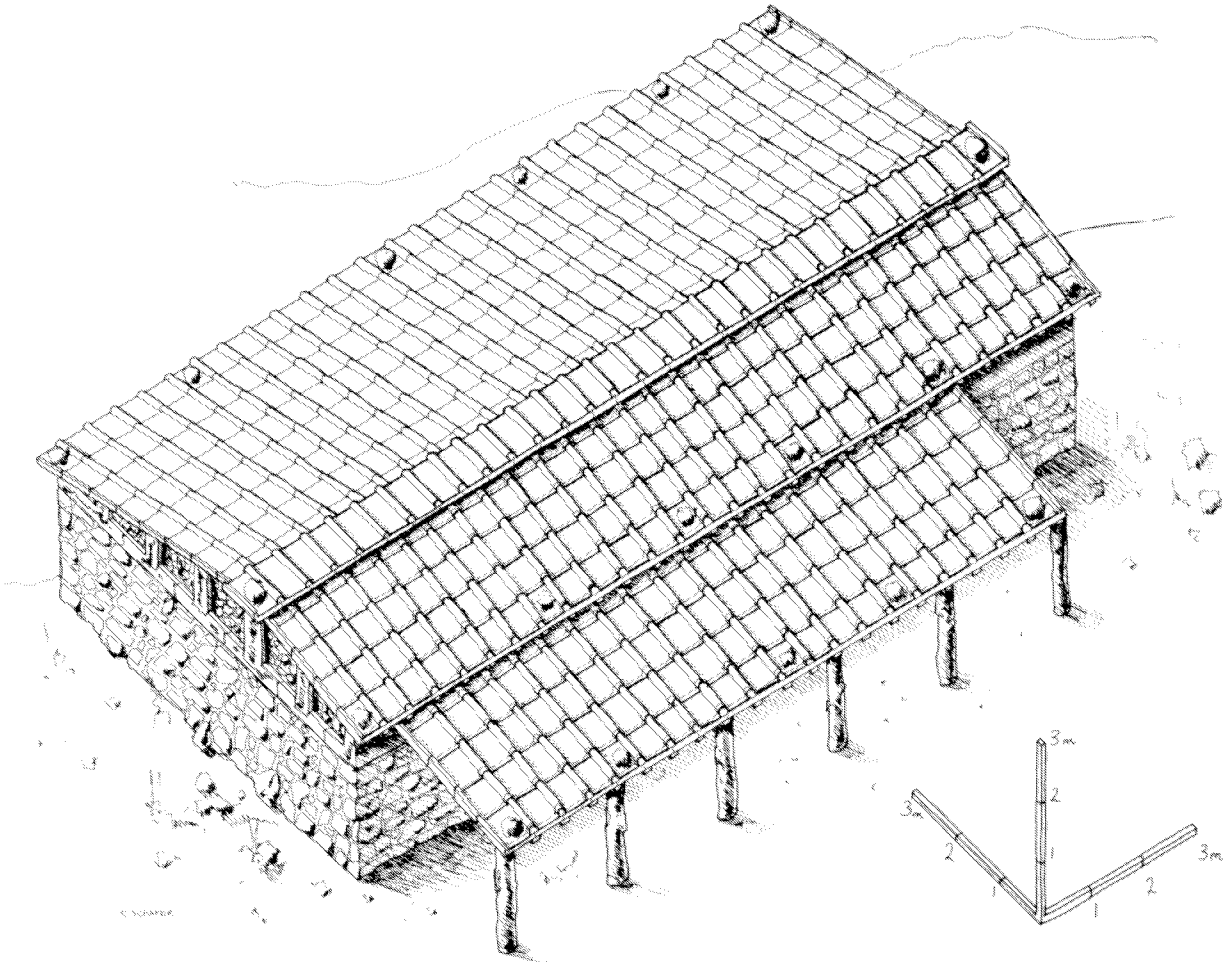


Fig.3.1.1 Reconstrution of Phase 1 of the farm at Podere Tartuchino Reproduced from the Papers of the British School at Rome (Attolini and Perkins 1992, Fig.20). Reconstruction drawing S.Schafer.

In the early fifth century the building was enlarged by the addition of two rooms to the west and one to the east, all of the pitched roofs were tiled with pantiles and canal tiles. At the same time the northern side of the courtyard was enclosed by a stone wall as protection against hill wash and rain water from the steep hill side (Fig.3.1.2).

The large central room contained a hearth and a large *pithos* sunken into the beaten earth floor. This room appears to have been the centre of domestic activity in the farm.

Only further research will reveal whether this single farmstead is typical of all the sites classed as house in the survey, let alone of all isolated rural settlements in Etruria but it provides a detailed and coherent example of what rural settlement in the valley was like. Recently a small site has been investigated at Pietriccioli 5km east of Marsiliana (possibly site MAR91). Details are scarce but construction seems to be similar to that at Tartuchino and rooms are arranged around a large yard (Michelucci 1991, 346; in press).

House or tomb

Criterion 1: A thin surface scatter smaller than 200m^2 without other evidence to suggest it is a house or a tomb.

Comments: This category is used where there is uncertainty about the nature of the site, this is often caused by poor visibility in the field or few finds at the location. The classification of 'House or tomb' is conceptually unfortunate since burial was not practised usually at settlement locations during the Etruscan period, but it is preferable to a spurious classification as a tomb or house. The potential confusion between a settlement and a tomb seen as a surface scatter arises because stone was be used in tomb structures, as at Marsiliana (Minto 1921), either in constructing a chamber or tumulus, or filling a grave. Furthermore, tile was also used in the valley in tombs (vonVacano 1985, 184). This category is further discussed in chapter 4.

House or Necropolis

Criterion 1: A thin surface scatter larger than 200m^2 and smaller than 1,000m^2 without other evidence to suggest it is a house or a necropolis.

Comments: This category is similar to the 'House or tomb' but is used for sites with a larger surface area.

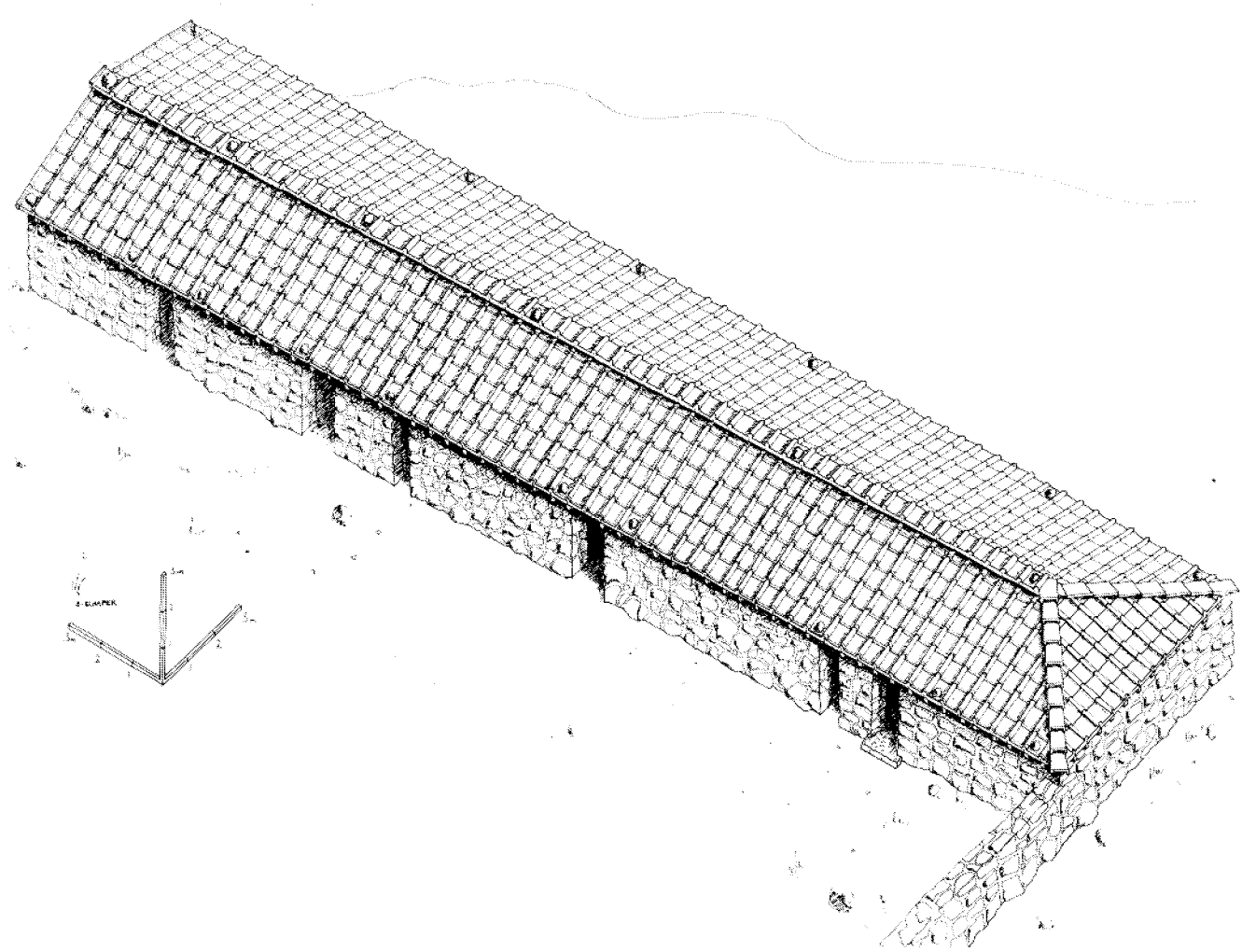


Fig.3.1.2 Reconstrution of Phase 2 of the farm at Podere Tartuchino Reproduced from the Papers of the British School at Rome (Attolini and Perkins 1992, Fig.22). Reconstruction drawing S.Schafer.

House 2

Criterion 1: As house with additional evidence for a substantial structure in the form of concrete, *cocciopesto* or floor tiles (e.g. *opus spicatum*).

Criterion 2: Scatters between 1,500m² and 2500m² with large quantities of building materials.

Comments: This category is only used for some Roman period sites.

Villa

Criterion 1: Standing structure, e.g. *cryptoporticus.*

Criterion 2: Architectural fragments, column drums, bases or capitals, painted wall plaster.

Criterion 3: Scatters larger than 2,500m² with large concentrations of finds, especially building materials.

Criterion 4: Bibliographic accounts.

Comments: This is not the place for a detailed account of the nature and genesis of the Roman villa in the Ager Cosanus and Albegna valley. The best preserved and excavated example of a villa is at Settefinestre (Carandini 1985b). Another villa has also been recently investigated in the upper valley (Del Chiaro, 1990). The surface scatters in the survey have been contrasted with those in the Ager Veientanus (Celuzza and Regoli 1982), and are fully described in the survey report (Carandini and Fentress in press). The term is only applied here to Roman period sites. The inclusion of sites classed as villas in the tables and maps of the third and second centuries does not necessarily imply that these sites must be considered as villas in this early period. The nature of the surface scatters does not enable the criteria for a classification as a villa, architectural fragments etc. to be certainly dated by association with black gloss wares or amphorae dating to the third or second century (Carandini 1985, 145-7). Therefore sites marked as 'villa' in the second or particularly the third century are prerhaps better considered as sites which at some later time were occupied by a villa. Their nature at an earlier date is not clear from the surface remains.

Fortified hill top

Criterion 1: Defensive wall around hill top smaller than 4ha.

Comments: A category for a small group of sites where a hill top was fortified and little or no ceramic was found, largely due to vegetation and lack of agricultural activity.

Discussion: This class of site is poorly understood and not certainly dated to the Etruscan period, although Etruscan pottery was found at two of the sites, the others yielded no finds. However a similar site has been identified in the Fiora valley at Rofalco on the edge of the Selva del Lamone, a high plateau overlooking the plain of Vulci to the South (Rendeli 1985). This site covers *c.*1.5ha. and is enclosed on one side by a dry stone wall *c.* 4m thick and by a steep slope on the other. The wall appears to have towers and a gate. Pottery indicates that this site was occupied between the late sixth and early third centuries, there are also indications of four other similar sites around the Selva del Lamone (Rendeli 1993, 212-20). None of the survey sites are as well preserved as Rofalco but at Poggio Pietricci (LC34), a pair of fortified hill tops (1.04ha. and 0.42ha) are enclosed by a dry stone wall *c.* 1.5m thick, and the larger hill top has traces of a gate. The hill top occupies a very important strategic location at the watershed between the Elsa valley and the valley of the Tafone and so controls the natural route from the lower valley of the Fiora to the middle, and upper reaches of the Albegna, that is from Vulci towards Saturnia. To the south west the hill top of Monteti (CAP66) preserves traces of a defensive wall visible in air photos and on the ground (Cosci 1988). This hilltop dominates the coastal strip. Slightly further to the south west the site of the medieval and modern settlement of Capalbio is another candidate to be a fortified hill top as two Etruscan sherds were found at the site of the castle (CAP65). The final site in this group is at Poggio Poggione (CAP59). Here the remains of a dry stone wall surround a low hill top. Once again the site of this settlement is of great strategic importance, being the at the point where the two routes which join the western end of the coastal strip to the lower Albegna valley, via the Val d'Oro and the Radicata Valley, come together to descend into the Albegna Valley south of Marsiliana. Two other locations might also fall into this group, Poggio Capalbiaccio, the site occupied by early medieval Capalbio and covered with medieval ruins and Poggio Cavallo (MAR234) to the north of the Radicata.

Together these sites constitute a chain of strategic locations guarding the routes between the coastal strip and the lower Albegna Valley. If the site at Rofalco is included in this sequence it is perhaps possible to see the fortifications as a sequence running from Monte Argentario towards Lago di Bolsena. The sites are poorly dated, but if the dating of Rofalco can be extrapolated to the other sites we can hypothesise a chain of fortifications dating between the sixth and the third centuries BC. In this historical context it becomes possible to suggest that the sites form a planned series of defences protecting the northern and eastern frontiers of the territory of Vulci. Only excavation work can provide further details about theses sites which could test this hypothesis.

Village

Criterion 1: A scatter of material that would qualify as a house but larger than 1,000m^2 and smaller than 4ha.

Comments: The term village is used in preference to an anodyne 'nucleated settlement' to signify a collection of houses. The size of the scatter is used to differentiate a village from a house or a minor centre.

Criterion 2: A series of clearly distinguishable scatters of material classifiable as a house each larger than 100m^2 and extending over less than 4ha.

Comments: This variation is present to enable large but discontinuous scatters to qualify as villages.

Discussion: Sites such as those described here as villages are unusual in Etruria. Within the study are itself they seem to have a rather particular distribution, being found mostly in either the upper valley or in the coastal strip, particularly around the mouth of the Chiarone. The large site at Bengodi on the northern slopes of the hill of Talamonaccio, probably the port of the city at Doganella, is also included in this category of village. On the surface, these sites appear as large house sites, the largest (PR9.0) covers some 4ha. several others are around 1ha. The sites are clearly too large to be the home of a nuclear, or even extended family. Similar sites have yet to be reported from other field survey projects in Etruria, but a site being excavated near Siena, previously thought to be a farm, would now seem to be becoming a village (Caccioli and Whitehead 1994). However, an excavated site further north, at Lago dell'Accesa near to Vetulonia (Camporeale G. *et al.* 1985) provides the best impression of what one of these sites may have been like. The site lies on a hill slope and consists of a series of buildings, each of which was planned with orthogonal walls, individually not dissimilar to the building excavated at Podere Tartuchino. However, the village itself does not appear to be planned and little organisation is apparent in the disposition of the buildings. Although the entire site has not been excavated there is little evidence for differentiation between buildings either in terms of their size or function. Neither is there any evidence for the presence of public buildings or public open spaces, although the suggestion is made that the space between buildings IV and VIII might be a planned space (Camporeale G. *et al.* 1985, 169), however its dimensions (20 x 25m) would seem to indicate that it would have been more of a courtyard than a *piazza*. Furthermore, the site is neither defended by a wall nor fortifications nor is it in a particularly defensible position in the landscape. At least six distinct buildings have been excavated covering an area of *c.* 0.5ha. in Area A, and further buildings, not yet published, have been found on the hill top in Area B. The excavators suggest that the site was a settlement for miners (Camporeale G. *et al.* 1985, 135) but are extremely non-committal on the status of the settlement, referring to it most often as an '*abitato*' (inhabited area). However, parallels are drawn between the site and Acquarossa (Camporeale G. *et al.* 1985, 170) which is a defended settlement and some form of political control of the surrounding territory is suggested (Camporeale G. *et al.* 1985, 170). All of this is highly speculative on the part of the excavators, and perhaps the safest judgement to make is that a site such as Lago dell'Accesa occupies an intermediate, but perhaps specialised, position in the hierarchy of settlement between the isolated rural settlement and the minor centre which is defended and has urban pretensions. A similar role

may be suggested for the sites classed as villages in the survey area.

The distribution of villages in the Albegna Valley and the Ager Cosanus is highly patterned. A cluster of villages were found around the mouth of the Chiarone (PR9, 10, 24 and 27). The concentration of population is unusual but is surely associated with the position at the mouth of the river and may indicate that the river mouth was used as a port or at least landing point in the Etruscan period. The density of late Geometric pottery at Pescia Romana, for example the large crater in the Grosseto Museum (Cristofani 1981, Fig 173; Mazzolai 1984, 101-2; Rendeli 1993, 167), has been used to suggest that there may have been an *emporion* in this area (Torelli 1982,175), if so, the villages on the Chiarone are the most likely location and the late eighth century date of the pottery is not inexplicably early since the site of PR24 was also occupied in the preceding Iron Age. The mouth of the other major water course on the coastal strip, the Tafone, is not as densely settled, but some 18 km to the south east between the mouths of the Fiora and the Arrone lies the settlement of Regisvilla which acted as a port or *emporion* for Vulci. The villages at the mouth of the Chiarone lie midway between the sites of Orbetello and Regisvilla. Excavations at Regisvilla, only published in summary form, have revealed an orthogonally planned building, a street and large quantities of imported pottery (Tortorici 1985).

Another of the village sites lies on the slopes of a hill at Bengodi below the hill of Talamonaccio, it covers over 1 ha. A Villanovan bowl (Mazzolai 1984, 89) found at Bengodi suggests that this settlement originated in the later Iron Age, along with other small sites in the hills to the north and east of Talamonaccio (von Vacano 1985, 39 and map inside front cover), in contrast to the Bronze Age and early Iron Age foundation of the settlement on the hill of Talamonaccio (Cristofani 1982, 95, n.2; von Vacano 1985, 35-40). The dynamics of the relationship between the two settlements before the fifth century are not clear, and the fact that neither site was particularly accessible to survey; Bengodi under pasture, and Talamonaccio built up, meant that this survey did not clarify the issue. However, as has been suggested most recently by Ciampoltrini (1985, 115-6; in press), it would seem that the preponderance of sixth century ceramics, and its subsequent history, indicates the development of Bengodi, rather than Talamonaccio, as the primary settlement and port in this century. The importance of the Bengodi-Talamonaccio complex as a port is best seen in relation to the contemporary development of the nearby city at Doganella. Before the drainage schemes of the Bonifica di Talamone the site of Bengodi (TAL 115) formed the best natural port in the bay of Talamone, and since the mouth of the Albegna has yielded no Etruscan material, it must be seen as acting as a port for the city at Doganella, the maritime outlet for the agricultural produce of the city, particularly the wine amphorae. The development of *emporia* in relation to Etruscan cities is well documented during the sixth century (e.g. Gravisca, Pyrgi and Regisvilla). In this context, perhaps the Greek genesis of the toponym Talamone becomes significant. In addition, the discovery of an antefix and a fragment of sima or geison, (Cappelli 1930 p.300; Mazzolai 1984 p.89, Tav.XII top, fig.16; von Vacano 1985 p.166) suggests the presence of a sanctuary at Bengodi, the second essential component of an archaic *emporion* (Torelli 1977). The site at Bengodi also produced large numbers of loom weights indicating textile manufacture at the settlement.[10] The site at Talamonaccio is further discussed below.

A second cluster of villages was found in a very different context in the upper valley on the hill of Semproniano. Here three villages covered an area of 4.08 ha. (SAM17, 22.1 and 127). The hill itself is a large travertine plateau 7 km north of Saturnia which dominates the valley, its peak is at 696m and most of the 100+ha. of the hill lie above 600m. The settlements are the highest in the valley during the Etruscan period, but nevertheless the hill acted as a focus of settlement, and as a whole, begins to take on some aspects of a minor centre (particularly its defensible location and size) however no traces of artificial defences were found.

A further village site covering 0.12ha. was found in a similarly strategic and remote area between the Valleys of the Tafone and the Elsa at LC42.1, *c.* 700m ,east of the fortified hill tops at LC34.

A final group of villages lay in a more favourable location on the southern slopes of the Radicata Valley and the southern margin of the lower Albegna Valley (CAP46, 100, ORB104, 107). These varied in size from 0.25 to 1 ha. And are evenly spaced about 2.5km apart along the margin between the Dolomitic limestone hills and the alluvial deposits. The sites at CAP46 and CAP100 lie to either side of the fortified hill top at CAP59. CAP46 also lies on the south side of the Lago del Cutignolo, a small lake which was probably more extensive in the Etruscan period. The site also yielded evidence for pottery production.

Minor Centre

Criterion 1: Scatter of material classifiable as a house extending over more than 4ha.

Comments: Size is used to distinguish such scatters from villages.

Criterion 2: Presence of recognisable defences (e.g. a wall) enclosing more than 4ha.

Comments: Size distinguishes such sites from fortified hill top settlements and the use of the presence of walls enables sites which are the location of modern settlements, and therefore not surface scatters, to be included.

Minor centres of this type are typical of the coastal areas of southern Etruria, from the northern part of the territory of Cerveteri to the territory of Vulci. Generally they are of two types, coastal centres, such as Pyrgi or Gravisca, matched in this area by Talamonaccio and Orbetello; or inland centres, often in frontier areas, for example Tuscania, Blera or S.Giuliano (Torelli 1981, 112-3), which compare with Ghiaccioforte and Saturnia. These settlements were presumably subject to the major cities, and themselves acted as central places for the undifferentiated rural settlement.

[10] . Further details of the site are presented in Ciampoltrini (in press).

Similar minor centres are also common in the upper valley of the Fiora at Castro, Le Sparne / Poggio Buco, Sovana and Pitigliano (Rendeli 1993, 168-71).

The minor centres all share good strategic and defensible locations in the valley. They are also evenly distributed, if Doganella is included each is c.10km from its neighbour, a pattern which may be extended if the villages on Poggio Semproniano are considered as a centre. The minor centres are confined to the Albegna Valley, although Orbetello does lie between the Valley and the coastal strip. It is perhaps surprising that the hill of Cosa was not occupied in the Etruscan period: despite intensive excavation on the hill no Etruscan find has ever been reported. The hill dominates the route up the coast and its broad flat top is visible from afar, in short it is an ideal location for an Etruscan centre. Perhaps its only disadvantage is a lack of water and the closeness of Orbetello. The absence of an earlier Etruscan settlement may also have attracted the Roman colonists in the wake of the Roman conquest.

Talamonaccio

Issues relating to Talamonaccio have already been introduced in the discussion of the village at Bengodi which seems to be a twin settlement with Talamonaccio on the top of the hill. The best known discoveries from the hill are the remains of a figured terracotta temple pediment and frieze. This dates to the third or second century, the precise date is much debated but it does seem that the cultural context of the scene in the pediment is Roman rather than Etruscan (Pairault Massa 1985; von Freytag 1977; von Vacano 1961; 1975; 1988). Recent examination of the notebooks of 19th century excavations has recovered some of the plan of this temple and some details of the city walls (Sensi 1987, Fig. 2). It would seem that the walls were constructed with the same polygonal technique used at Orbetello and Cosa,. but little else is known of the nature of the settlement other than terracing, which may be Roman, and a circular structure (Gamurrini 1888, 685; von Vacano 1988, 6-30).

Ciampoltrini has suggested that in the archaic period the settlement was concentrated at Bengodi as a port, and in the fourth century a walled town with temple was built on the hill which became a centre for an aristocracy (Ciampoltrini 1985, 115-6; in press). The survey data adds to this reconstruction in that finds from Bengodi suggest that the site was occupied from the seventh to the fourth centuries but material from the hill of Talamonaccio (TAL110.1) dates from the seventh century to the second century BC. The only difference this makes to Ciampoltrini's reconstruction is that it now seems that the fourth century building of the city walls and the first temple on the hill were not *de novo* foundations.

Orbetello

The Etruscan centre at Orbetello is poorly known, largely due to the presence of the modern settlement. The best known remains are the walls of the settlement. These walls surround the tip of the peninsula and are complete except for the eastern part which would have crossed the peninsula. The walls are of polygonal construction and rise from the lagoon enclosing c.17ha. (Ciampoltrini 1985b, 91-2) with at least one sea gate, now blocked (Raveggi 1939), and no towers. Little is known of the internal organisation of the settlement, although paved roads have been reported and recent excavations on the southern edge of the town have recovered evidence for archaic occupation. Two structures, possibly for storage have been dated to the early sixth century, these appear to have been abandoned in the early fifth century, and the site of the excavations was not reoccupied until the medieval period. Elsewhere in the town Hellenistic levelling deposits have been identified (Ciampoltrini in press b). Ciampoltrini advances the hypothesis that the lack of fifth century strata and the lack of fifth century finds from the cemeteries indicate that the site was abandoned in the fifth century (Ciampoltrini 1985b, 93; in press b), this seems rather bold given the lack of data. Nevertheless, the polygonal construction of the walls, best paralleled at Talamonaccio (Gamurrini 1888, 685), Cosa (Brown 1980, 15) Saturnia (Michelucci 1985c, 132) and Pyrgi (Lugli 1957, 115) suggests that there was a major development with the fortification of the settlement in the fourth, or even the third century. The best dating evidence for this style of masonry used in town walls is the foundation of Cosa in 273 BC, the walls at Talamonaccio and Orbetello are not dated and the walls of the *castrum* at Pyrgi are not precisely dated but probably post-date the confiscation of the territory of Cerveteri (273 or 4 BC) (Harris 1971, 149) and probably predate 191 BC by which time the Colony was established (Livy XXXVI, III). Recent finds of black gloss wares from the a*telier des petites estampllies* and Greco-Italic amphorae from the site have been used to suggest that the walls are in fact contemporary with those of Cosa and that Orbetello may have been an important naval base in the first Punic War (Ciampoltrini 1995).

Ghiaccioforte

The centre at Ghiaccioforte is located on a hill (264m) on the north bank of the Albegna. It dominates the middle Valley at the point where the flood plain and terraces of the lower valley narrow and the river passes between two hills. The location is very strategic and controls the passage from the lower to the upper valley. The site is presently unoccupied and has been investigated by excavators from the University of Santa Barbera and the Soprintendenza (Del Chiaro 1976; Rendini 1985). The circuit of the walls has been traced and the settlement has a figure of eight shape with the walls enclosing the twin peaks of the hill top. The walls, up to 4.5m thick, were built of pebbles with larger boulders forming the faces, the excavators suggest that these are the foundation for mud brick walls 6-8m high (Del Chiaro 1976,10). At least three gates have been excavated. The passage through the wall is oblique, the actual gate is recessed into the wall. In the north west gate, probably also the south east gate, a chamber is on the interior of the gate. There are no towers on the walls although the recessed gates do have the effect of creating bastions to either side of them. The walls have not been directly dated but they may be dated to the fourth to third centuries by analogous gate plans at Ostia or Cosa for example (Boëthius 1978, 118, 125). However, the lack of Roman material from the site suggests that the walls date to the Etruscan period.

Within the walls an area has been excavated in the saddle between the hill tops, here parts of two buildings with a

paved street between have been found. The smaller of these is a single room but the larger is arranged around a courtyard and lies close to the walls. On the south east side of the courtyard are two rooms, here domestic refuse was found, including two pithoi and possible a grinding stone (Del Chiaro 1976, plan D). On the other side of the courtyard a file of four rooms has been uncovered. The south western room contained a furnace, a hearth, a water tank, smelting waste and tools, and has been identified as a metal workshop (Rendini 1985), the same room has since been reinterpreted as a kitchen (Rendini in press), metal working tools have been found close to the south eastern gate. The walls are constructed of river pebbles bound with clay, just as at Podere Tartuchino, although it is suggested that the elevations were of mud brick (Rendini 1985, 131). The building was roofed with a combination of pan and canal tiles. More walls have been uncovered of the eastern hill top although no building plan can be reconstructed.

The building in the saddle of the site was destroyed by fire, probably in the early third century, and there is no evidence for Roman occupation.

Saturnia

Little is known of the Etruscan settlement at Saturnia. Pliny the Elder states that the inhabitants of Roman Saturnia were previously called 'Aurini' (*Nat. Hist.* III,52; Rackham 1947, 40-1). The settlement sits on a travertine plateau which dominates the upper valley above a bend and ford on the Albegna. The ancient walls which survive in part, although built over by the medieval walls, are thought to date from the foundation of the Roman colony in 183 BC although there is no direct evidence for this assumption. Their construction is polygonal masonry in the third style of Lugli (1957, 115) just like that at Talamone, Orbetello and Cosa.

Recent excavations within the city have revealed rectangular rooms dating to the mid second century BC. These were built over an extensive destruction level of fallen tiles and burning dating to the first quarter of the third century. Below this layer an area paved with rectangular blocks was found. At one end of this area were two column bases and the carbonized remains of a timber column (Michelucci 1982; 1985c). It is not at all clear what this structure was, the excavator suggests it may have been a monumental gateway or *propylon* (Michelucci 1982, 34). The excavations did not recover any strata or even finds earlier than the fifth century. No other Etruscan structures have been excavated within the walls.

City

Criterion 1: Scatter of material classifiable as a house extending over more than 30ha.

Comments: This classification is reserved for Doganella in the Albegna Valley due to its size, *c.*240ha. the next largest settlement is Orbetello at *c.*17ha.

The site at Doganella is an enormous defended settlement on a low, fertile promontory of the terraces on the north bank of the Albegna, about 6km. from the coast. The site was rediscovered during the Albegna Valley Ager Cosanus survey and was surveyed over several years. The results have been published in the papers of the British School at Rome. (Perkins and Walker, 1990)[11]. The site was noted in the last century and variously identified as Telamon or Vetulonia (Francois 1851; Dennis 1845). However, once the real site of Vetulonia was discovered the city in the Albegna Valley disappeared from scholarly literature and was quietly forgotten about. This is remarkable as its size is only surpassed in ancient Italy by the area enclosed by the Servian Walls of Rome. One reason for this may have been the atypical location for an Etruscan city, on low lying land without strong natural defences, but also no mention of the city has survived in ancient sources and so scholars have not been attracted to the site.

The most detailed accounts of the walls which enclosed all of the settlement were given in the 19th. century; Francois (1851, 6-7) described a standing city wall, constructed of squared blocks which he saw in 1824. Dennis relates the plundering of the city wall for road stone in 1842 when a plan was first made of the city (Dennis 1845; 1878, 266-7; Michelucci 1984, Tav.1a). The walls are undated but the use of squared blocks and lack of towers suggests a late Etruscan date, Dennis likens them to the walls of Populonia (Dennis 1878, 265-6). Excavations on the soil mark have revealed a wall footing of large un-worked stone *c.*1.2m wide with no real foundations. The inside and outside faces of the wall were built of larger stones with smaller stones in filling. Fragments of white tufo (presumably lacustrine limestone) found in the soil indicate that the superstructure may have been built of tufo blocks (Michelucci 1991b). A double bank and ditch survives at the eastern end of the site crossing the terrace where the city is not defended by slopes (Perkins and Walker 1990, Fig. 45). Three gates can be detected on the aerial photograph but originally there were probably more. The evidence for the type of wall is scanty but it would seem to have been more like the wall of Ghiaccioforte than the walls of Orbetello, Talamone, Saturnia or Cosa.

The city walls enclose some 240ha. but not all of this sub rectangular space seems to have been built upon. The remains of stone buildings with tiled roofs only cover 120ha. of the city and gravitate along a central cobbled street which runs from south-west to north-east. Although there are traces of other streets parallel to this, the presence of oblique streets suggests that there was no rigidly orthogonal city plan. With the exception of the pottery and amphorae kilns to the west all of the scatters of material were of a domestic nature.

Small excavations within the walls of the city have revealed the remains of orthogonal buildings and a paved street flanked by a portico (Michelucci 1985b; 1991b) but no coherent structure has yet been uncovered. Collapsed roofs indicated that the buildings were covered with a tiled roof.

There is little certain evidence for the occupation of the site in the seventh century, only one sherd of buccheroid impasto and a sherd of impasto ribbed kantharos are securely of seventh century date. The earliest precisely datable object is a

[11] This section is drawn from elements of Perkins (in press) and Perkins and Walker (1990).

sherd of Caeretan cylinder impressed pithos from the last quarter of the sixth century. Fine and coarse cream wares provide abundant evidence for occupation in the late sixth to the fourth centuries. Fourth and third century occupation is represented by black gloss wares.

The distribution of dated ceramics (Perkins and Walker figs. 10-18) demonstrates that after the initial development if the site there was little change in the size or in the density of occupation of the city. The latest pottery dates to the first quarter of the third century BC.

Kiln
Criterion 1: Presence of ceramic wasters.

Comments: May be used singly or in combination with any of the above.

Very few kiln sites were identified outside of the city at Doganella, only nine sites in total and 3 of these (SD216.1, 216.2 and 250.3) are very close to Doganella. Most of the kiln sites were house sites where ceramic wasters were found, suggesting that potting and tile manufacture were often integrated with domestic activity. An exception is CAP46 where the kilns formed part of a village settlement. Of the two sites simply identified as kilns FP116.2 is close to a series of house/tomb sites FP116.1, .3 and .4). Finds of ceramic wasters at other sites (LC39.1, FP28.0, FP116.1, FP116.1, LC32.2, PF53.0, SD174.1, CAP46.0, SD189.1) indicate that pottery was probably also made at sites where the survey did not identify kilns. This is not particularly surprising as the coarseware itself seems to have been fired in simple clamp kilns or even bonfires, neither of which leave many traces. Sadly, no Etruscan kiln has ever been scientifically excavated, and although a great deal is known about some forms of Etruscan pottery there is virtually no direct evidence for how they were produced.

Sporadic
Criterion 1: Very thin or small scatter of material or stray find not definable as any of the above.

Comments: This category is often employed to describe the find spot of small quantities of Etruscan material found mixed with material from a later Roman site which was not recognised as an Etruscan site in the field.

Temple
Criterion 1: Architectural terracottas of temple type.

Comments: A site where architectural fragments suggest a temple. In practice this category is limited to sites which have been excavated, for example Talamonaccio, or stray finds which can be related to a temple as a Bengodi.

In the survey area the only certain temple location is on the hill of Talamonaccio. Here, excavations (1892-3 and more recently), have recovered a series of fragments of decorative schemes of a temple. Extremely little of the structure of the temple has survived (von Vacano 1961; 1975; 1985; von Freytag 1977; 1982). The temple dates from the fourth century originally, it gained new antefixes in the third or early second century and a pediment decorated with terracotta figures depicting the myth of the Seven at Thebes soon after 150BC (Pairault Massa 1985). The choice of iconography is novel, but the style of the pediment fits well with Hellenistic standards in Etruria. By the temple is a crack in the rock from which sulphurous vapours emit and *ex votos*, some of which are anatomical, suggest that there may have been a healing cult on the hill., Thermal waters are also found on the eastern side of the hill at Bagnacci dell'Osa (Ciampoltrini in press; von Vacano 1985, 137).

A votive deposit was also found at Talamonaccio, this consisted of miniature agricultural implements and arms and dates to the second half of the second century BC (Michelucci 1985a; Parlavecchia 1992, 134-5).

Two fragments of architectural terracottas were found below the northern slopes of the hill at Bengodi to the north of Talamonaccio. A fictile antefix in the form of a female head, is dated between the end of the sixth and the early fifth century (paralleled at Roselle), and a fragment of sima or geison, (Cappelli 1930, 300; Mazzolai 1984, 89, Tav.XII top, fig.16; von Vacano 1985, 166) suggest that a second temple lay on the southern side of the Lagoonal inlet.

No certain temple was identified at Doganella although the terracotta column claddings (Perkins and Walker 1990, Fig.41.10-12) may well have belonged to a temple. Michelucci (1985b, 112) suggests that an excavated refuse pit may have been a *bothros* as it contained miniature vessels.

On the western height of the minor centre at Ghiaccioforte a votive deposit has been found. This contained bronze figurines of cattle and an offerant (or god) with a billhook, ceramic *ex votos* of heads and anatomical parts. The material dates between the sixth and the early third centuries. (Rendini 1985, 132). In the structure of the north west gate various reused stones with mouldings were found suggesting that there was a monumental building on the site before the walls were built, possibly a temple related to the votive deposit.

Road
Criterion 1: Alignment of stones or a cutting in rock.

The road system in the Albegna valley during the Etruscan period is extremely poorly understood. The remarkable preservation of roads in the areas of volcanic tufo in southern Etruria does not occur in this area (e.g. Potter 1979, 79-84). The best evidence from the Albegna valley is visible on aerial photographs of the city at Doganella (Perkins and Walker 1990, Fig. 9, Pl. 1). Roads can be seen in the city and a road passes through the south western wall towards the mouth of the Albegna. Two gates on the north western wall of Doganella suggest starting points for roads leading around the lagoon towards the *emporion* at Talamonaccio. Unfortunately, none of these roads can be traced for any distance from the city. To the north east of the city a road was noted at SD142 crossing Poggio Sacchetto. This route leads towards the area of lacustrine limestone around Magliano in Toscana used for chamber tombs. Within the city the roads are manifested as ploughed out strips of pebbles. One such scatter was cut by a ditch and the section shows that the road

ran between two buildings (Perkins and Walker 1990, 56-7, Fig. 44). Such paving was not recorded in rural areas.

The other possible trace of a road is suggested by an alignment of sites along the course of the future Via Aurelia (PR26).

Table 3.1 Frequency of settlement sites by type

Site type	Number
Sporadic	19
House or Tomb	168
House or Necropolis	3
House	106
Fortified hill top	4
Village	11
Minor Centre	4
City	1
Total	316

3.2. Settlement History

Dating of sites.

Dating of surface scatters is difficult (Potter 1979, 15-8; Cherry 1983, 379; Haselgrove 1985). Problems of residuality, preservation, visibility and collection strategy are all important. In the Etruscan period these problems are compounded by the fact that the best dated ceramics, Greek painted wares and bucchero, are extremely rare in surface scatters. In addition black bucchero is hard to see in a ploughed field with bright sunlight. Even when dated wares are found, if a piece has a date range spanning fifty years or so no precise statement about the date at which the material was actually deposited can be made. Thus if we have three sites in a small area all with sixth century pottery, there is no means of determining if the sites were simultaneously or sequentially occupied (Potter 1979, 72). The problems are well known to surveyors and Millett has reviewed the problem and suggested a methodology as a solution to some of the issues (Millett 1991). The method proposed involves a measurement of sherd density per hectare and a comparison with overall totals of pottery supply to a region. It is clearly an improvement on the automatic equation of pot sherd with occupation. However, the methodology cannot be applied to this data from the Albegna valley since sherd density was not accurately measured, only estimated at the surface scatters. This is the kind of problem which is bound to occur when a long term project is carried out in a period when methodology is developing rapidly. A further issue is that the preparatory work establishing an estimate of pottery supply, such as that done for African Red Slip Ware (Fentress and Perkins 1989), or Greek painted wares (Rendeli 1989) which are not common site finds in field survey, has not yet been done.

If only a general indication of date is required for a surface scatter the material from the Albegna valley can readily be divided into prehistoric, Etruscan or Roman on the basis of the presence and style of roof tiles found in a scatter. Thus, with confirmation from Roman finewares, we may be extremely confident of correctly identifying a surface scatter as Etruscan. However, many sites in the valley had long settlement histories and it was quite common to find that a Roman scatter concealed an Etruscan scatter. In some cases this was observed in the field, but in other cases the Etruscan material was not noted until the careful study of the ceramic finds, particularly the coarsewares (presented below in Chapter 6). It is this process of examination which is responsible for the differences in the dating of sites between this study and previous publications of the survey data (Perkins 1991; Carandini and Fentress in press).

In the Etruscan period the archaeological chronology is quite fine. Painted Greek pots from tombs provide dates which may be as precise as a quarter century or even a decade . Dating of surface scatters becomes more difficult, if not impossible, if this level of precision is required. Well dated fine wares will provide dating evidence when they are found but the most common find on Etruscan period sites, apart from tile, was coarse pottery. In Etruria, as with most of Italy, the pre-Roman wheel made coarsewares are poorly dated. The careful study of the evidence collected by this survey and similar material from elsewhere in Etruria has enabled the establishment of a rough sequence of changes in these coarsewares in the Albegna Valley (Perkins and Walker 1990, 34-5; Attolini and Perkins 1992, 95-101; Below Chapter 6), but dating of the wares is not precise and suggested date spans are often over a century in length.

This new regional pottery sequence has been used, with the evidence of fine wares, to assign a date range expressed in terms of centuries to the Etruscan sites. An attempt was made to assess whether or not each site was occupied in each century from the seventh to the second BC in the following manner. The date range given to each piece of pottery was assessed as to whether it was 'good', 'bad' or 'uncertain'. 'Good' was defined as a confident date, whereas 'bad' was a dubious dating or one with a span of more than 250 years. This takes account of different forms of uncertainty, for example a solitary *terminus ante quem* for a shape or an extended date range as in the case of a body sherd of Etruscan amphora which might date to anywhere between 625 and 375 BC. All the dated material from each site was considered together and each site was given an assessment of the likelihood of occupation in each century. This was derived from the assessment of the reliability of the dating assigned to each sherd of pottery. If a 'good' date range of a sherd overlapped with a century by 50 or more years then that site was given a 'good' for its likelihood of occupation in that century. If only a 'bad' date overlapped by 50 or more years then that site was given a 'bad' for its likelihood of occupation in that century. If there was no overlap or less than 50 years of overlap with a century the site was given the 'negligible' rating for its likelihood of occupation in that century. A final category for the sites is 'unoccupied' where the scatter produced no material possibly datable to that century. Scatters which produced no datable material, other than tile or pottery with an uncertain date were also given the negligible rating. Sites therefore end up with one of four possibilities for being occupied in a given century. This evaluation of the dating evidence has been used to produce a figure for the minimum number of settlements in a century, that is only the sites with a good rating for a particular century, and a maximum number of settlements in that

century, that is all the sites without an unoccupied rating. This method is the basis for presenting the history of the settlement pattern. The Roman period sites have been dated using fine wares alone[12]. The following tables show the numbers of sites dated to each century divided into classes of settlement sites, settlement/burial sites and other[13] sites. A more detailed breakdown is presented in the appendix of sites arranged by century.

[12] Roman finewares have been studied by Roselle Colomba of the University of Pisa and the coarsewares are being studied by Emanuele Papi of the University of Siena. Details will be published in the second volume of the survey report.

[13] 'Other' is used to categorise sites such as cuniculi, roads etc. which are neither settlements nor burials.

Table 3.2.1 Seventh Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	30	-	60	90	11	-	42	53
Total settlement/burial	23	-	80	126	6	-	61	67
Total others	0	-	2	2	0	-	3	3
Sub total	53	0	142	218	17	0	106	123
Grand total	341							

Table 3.2.2 Sixth Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	52	29	49	101	25	12	29	54
Total settlement/burial	36	23	67	103	27	6	1	28
Total others	0	0	4	4	0	0	3	3
Sub total	88	52	120	208	52	18	33	85
Grand total	293							

Table 3.2.3 Fifth Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	54	43	48	102	24	20	30	54
Total settlement/burial	40	26	63	103	28	23	39	67
Total others	0	0	4	4	0	0	3	3
Sub total	94	69	115	209	52	43	72	124
Grand total	333							

Table 3.2.4 Fourth Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	35	35	66	101	17	17	37	54
Total settlement/burial	25	25	78	103	18	18	49	67
Total others	0	0	4	4	0	0	3	3
Sub total	60	60	148	208	35	35	89	124
Grand total	332							

Table 3.2.5 Third Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	20	11	110	130	11	0	60	71
Total settlement/burial	16	6	89	105	9	5	63	72
Total others	1	0	3	4	0	0	3	3
Sub total	37	17	202	239	20	5	126	146
Grand total	385							

Table 3.2.6 Second Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
Total settlements	129	13	112	241	93	8	44	137
Total settlement/burial	35	8	55	90	22	6	15	37
Total others	8	1	6	14	2	0	4	6
Sub total	172	22	173	345	117	14	63	180
Grand total	525							

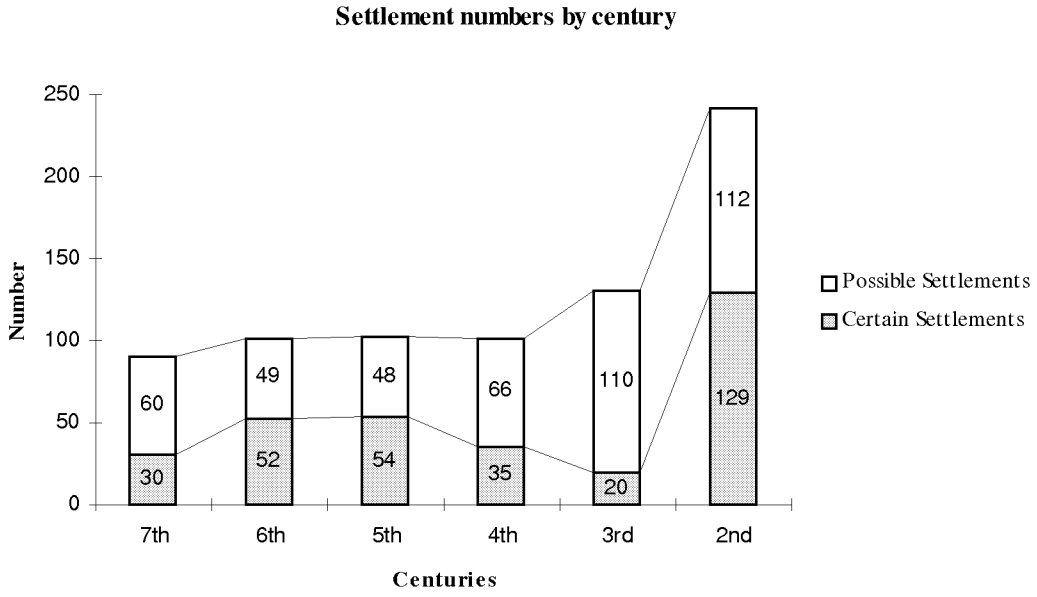


Fig.3.2.1 Graphical summary of site numbers within the samples

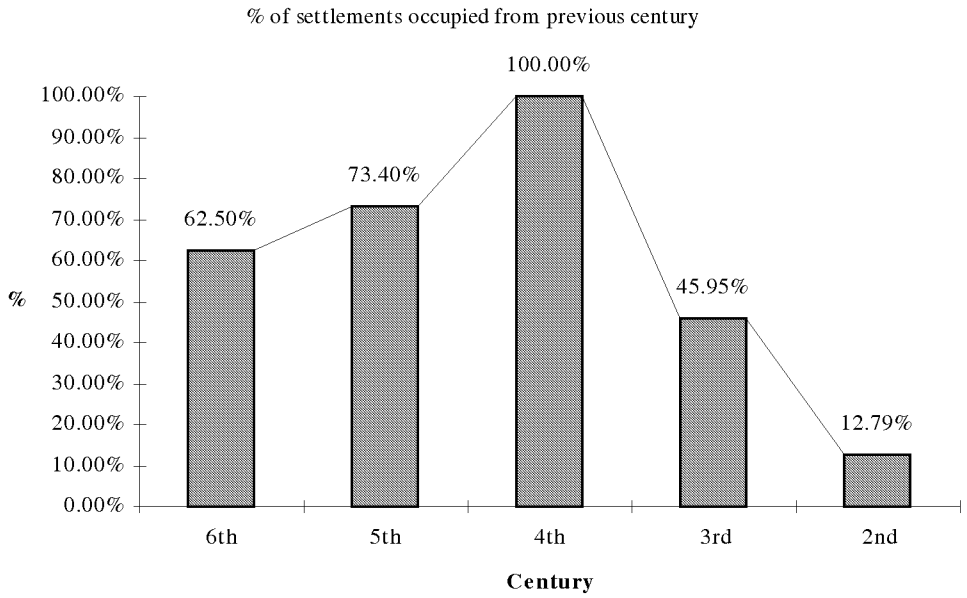


Fig.3.2.2 Graphical summary of settlement continuity

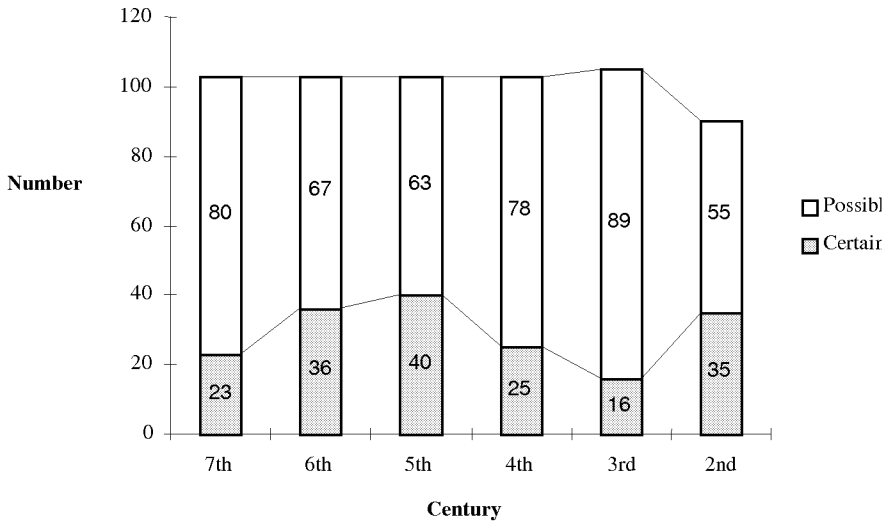


Fig.3.2.3 Graphical summary of settlement/burial sites

Discussion of site numbers

These raw numbers of sites indicate how many sites have been dated to each century and an indication is also provided of the number of uncertainly dated sites which might also date to each century. This gives both a maximum and a minimum number of settlements for each century. Although there can be no certainty that all of the sites were simultaneously occupied, the indication of the number of sites which were also occupied in the previous period provides a measure of the settlement continuity and likelihood that sites were occupied throughout the century. Only sites within the sample transects are considered in this discussion. For the certain settlements the figures indicate an increase in numbers from the seventh to the sixth centuries to a level in the fifth century which is almost double that of the seventh century (from 30 to 54 sites). In the fourth and again in the third century numbers fall to below half the number of sites there were in the fifth century (54 to 20). Finally, in the second century, after the Roman conquest, the number of sites dramatically increases to double the fifth century peak (from 20 to 129 sites). The number of possibly occupied sites follows this pattern except in the third century when their numbers almost double, due to the inclusion of both Etruscan and Roman sites which are poorly dated in the total. The settlement continuity increases up to the fourth century when there are no new settlements founded. This continuity plummets through the third century due to the Roman conquest. The resettlement of the valley in the second century

is also apparent in the lack of settlement continuity from the previous period.

Certainly occupied sites in the settlement/burial category (house/tomb sites etc.) closely follow this pattern except in the second century when the increase is not as pronounced as in the settlement sites and, if the possibly occupied sites are included, there is an overall decrease in the numbers of these indeterminate sites. Generally it should be noted that the proportion of poorly dated sites is much higher in the settlement/burial sites.

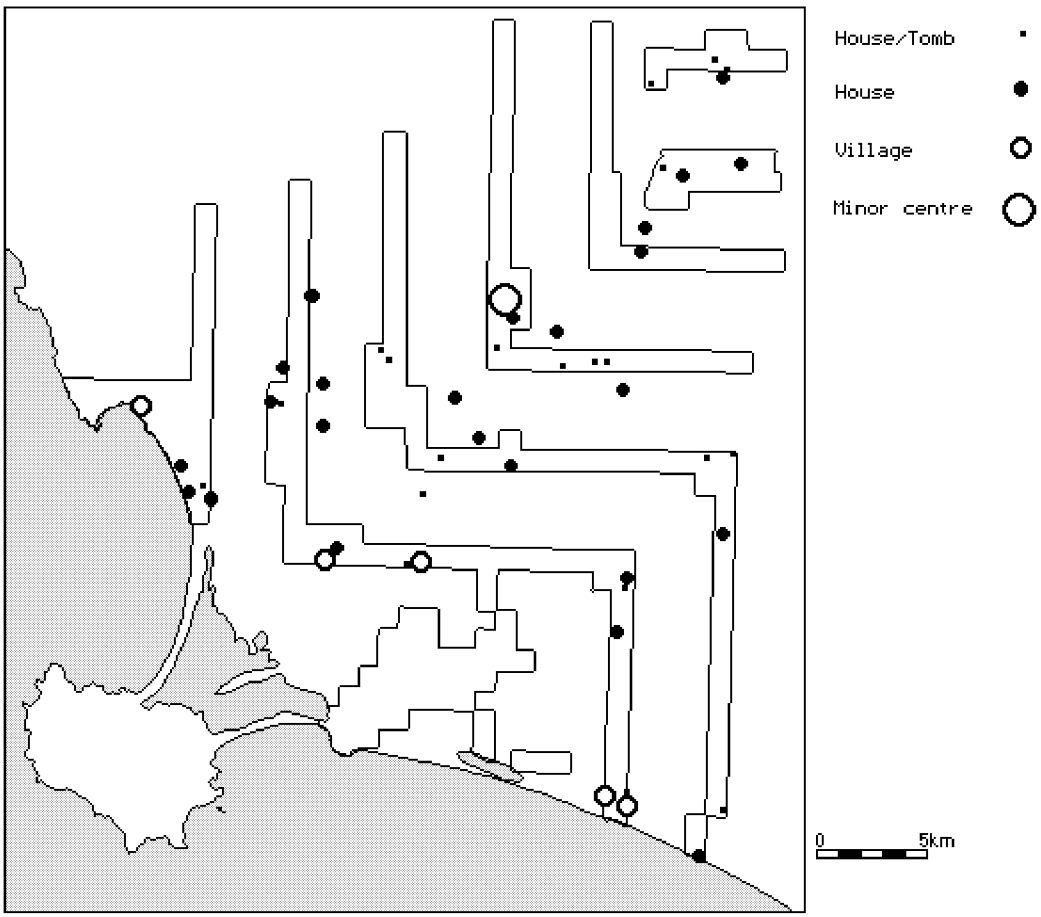


Fig.3.2.4 Minimum 7th century settlement pattern[14]

7th Century BC

The only future centre of settlement which has yielded certain evidence for occupation in the seventh century is Ghiaccioforte. However, it is by no means certain that this site was any kind of centre in this period, all the evidence for the minor centre comes from later centuries. In the maximum reconstruction all the future centres are represented, but present evidence for the date of first occupation of all of these sites is weak. In the minimum reconstructions, rural settlements in the form of house and house/tomb sites are widely, if thinly, scattered throughout the survey area. Small rural settlements are found from the coastal dunes to the upper valley around Semproniano, yet in the seventh century there do appear to be areas which were not settled. In both the maximum and minimum reconstructions of the settlement pattern both the northern part of the middle valley and the coastal strip closest to Cosa, with the Val d'Oro, appear to be unsettled. If just the certainly occupied sites are considered, the pattern becomes stronger, most of the northern slopes of the valley are unoccupied and the valleys of the Elsa and the Radicata, along with most of the coastal strip appear to be unsettled.

[14]The maps are intended only to provide only an impression of the settlement pattern, large scale maps of the settlement locations are being printed at 1:25,000 in Carandini and Fentress (in Press) and provide definitive site locations. Numbers of sites given in the tables and appendices are to be trusted over the number of dots on the maps since the maps are at a small scale and areas where sites are dense cannot be accurately drawn at this scale.

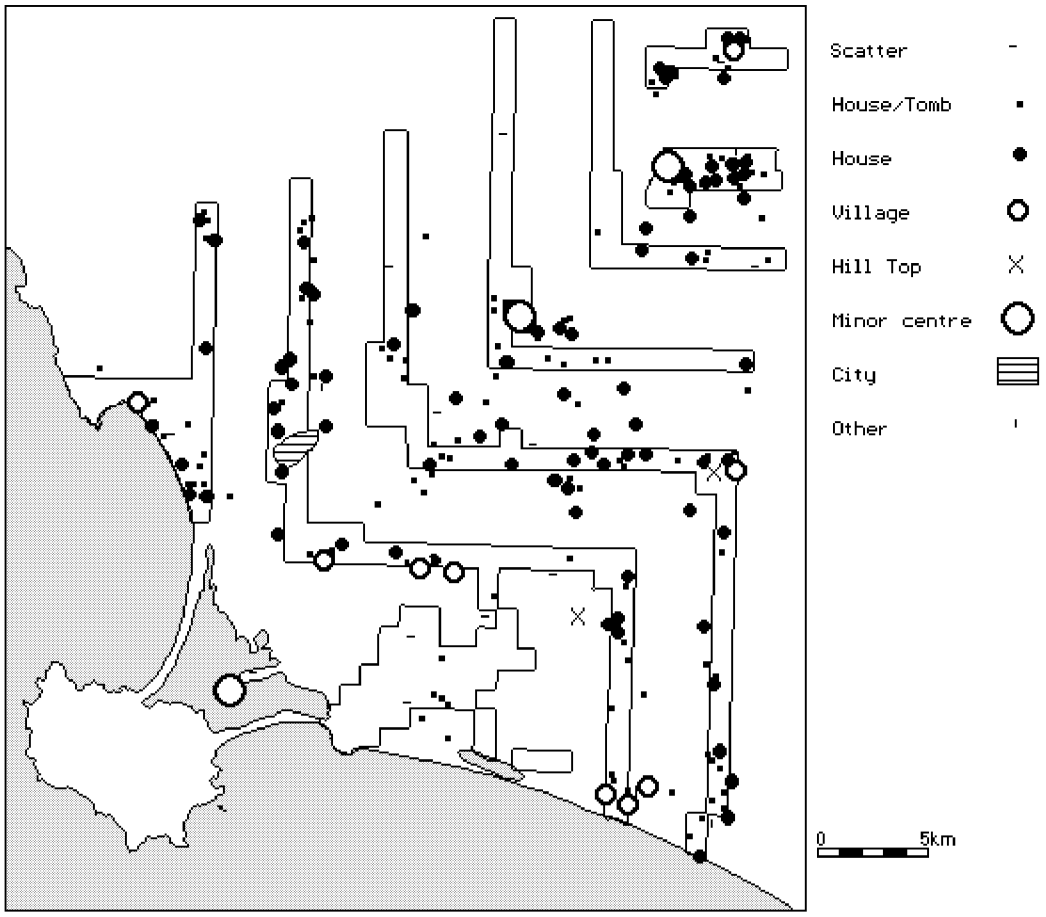


Fig.3.2.5 Maximum 7th century settlement pattern

Amongst the certainly occupied sites there is some evidence for a hierarchy of settlements, even if Ghiaccioforte is discounted. This is clearest in the coastal strip at the mouth of the Chiarone where two or three[15] villages lie near the river mouth. The sites, and possibly also a fourth in the seventh century lay around the coastal lagoons and probably acted as ports. These sites are all occupied early and the site at PR24 also yielded Iron Age material, one of the few sites in the Survey area to do this. At Bengodi, the site of the future port of Doganella, lay another village on the shores of the safe anchorage in the Gulf of Talamone. Here, no certain evidence for earlier settlement was found but a Villanovan bowl in the Grosseto museum was found at Bengodi (Mazzolai, 1984, 89) and Late Bronze Age and Iron Age settlement is also possible on the hill of Talamonaccio (Cardosa in press). In the lower Albegna valley itself a village was also found above the southern terraces at Poggio Raso, this too has yielded Iron Age material. These villages and Talamonaccio (possibly) are the only sites where there is continuity between the late Iron Age and the Orientalizing period of the 7th century. Another village was also found further to the east in the valley of the Radicata (CAP46).

If the possibly occupied sites are taken into consideration the settlement pattern becomes denser and the hierarchy more extensive. The city at Doganella and all of the future minor centres are included and they may well have been occupied by the end of the seventh century. The number of villages is increased by sites in the Valley of the Radicata, between the headwaters of the Chiarone and the Elsa and at Semproniano in the high valley. It is also possible that the fortified hill tops were occupied at this time. There is also a generalised increase in the number of rural settlements if the possibly occupied sites are included.

[15]PR9 and PR24 are only separated by the mainline railway from Rome to Genoa and may in fact be one site, they are so close that they only appear as one 'dot' on the map.

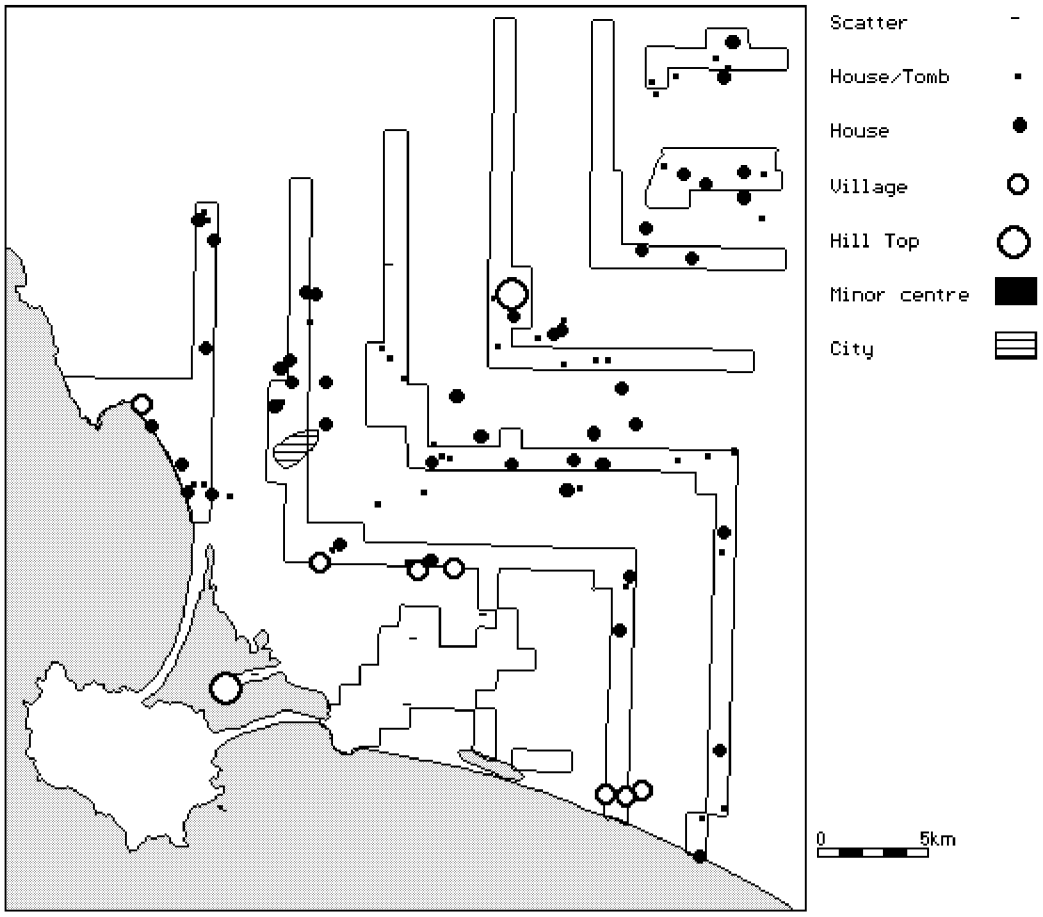


Fig.3.2.6 Minimum 6th century settlement pattern

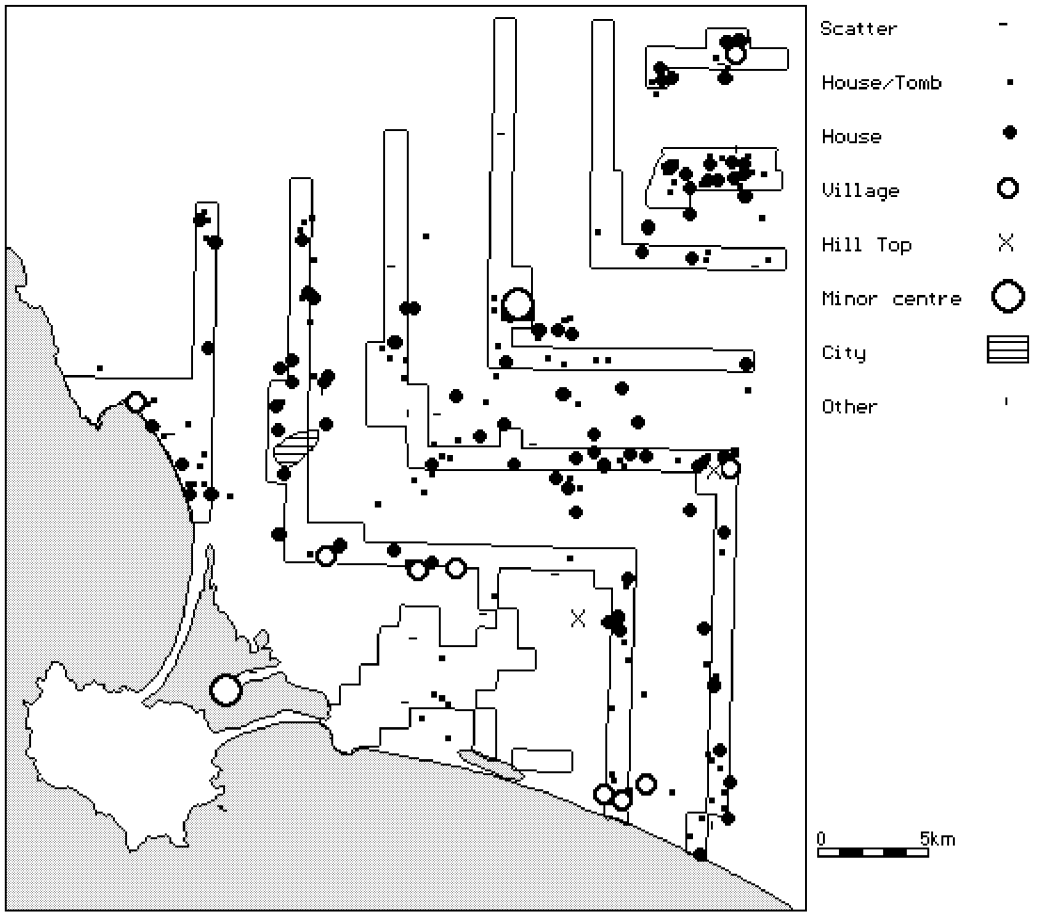


Fig.3.2.7 Maximum 6th century settlement pattern

6th Century BC

In the sixth century the minor centres are all certainly occupied with the possible exception of Saturnia. The number of the rural settlements almost doubles but the distribution of sites does not change particularly, except to the north of Talamonaccio where the hills around Collecchio are certainly settled for the first time, as is the upper valley of the Elsa. New villages are certainly occupied in the valley of the Radicata and near the mouth of the Chiarone. The growth of the city at Doganella seems to be in tandem with, rather than at the expense of the rural settlement. Even in the sixth century the western part of the coastal strip and the Val d'Oro appear to be settled only if the uncertainly dated sites are considered, and even then the northern slopes of the middle valley are unoccupied. The settlement pattern including the uncertainly dated sites suggests a dense settlement of most parts of the valley, particularly around the centres and the city at Doganella.

5th Century BC

The settlement pattern in the fifth century in the lower valley and the coastal plain is similar to that in the sixth. The hills north of Doganella are certainly occupied in this century but the major changes are in the upper valley. Here the minor centre is certainly occupied for the first time and the number of rural settlements in the sampled area around the centre more than doubles. Added to this a village site develops on the hill of Semproniano in the high valley. Consideration of the uncertainly dated sites increases the density of the settlements but coastal strip and the Val d'Oro along with the northern slopes of the middle valley remain thinly settled.

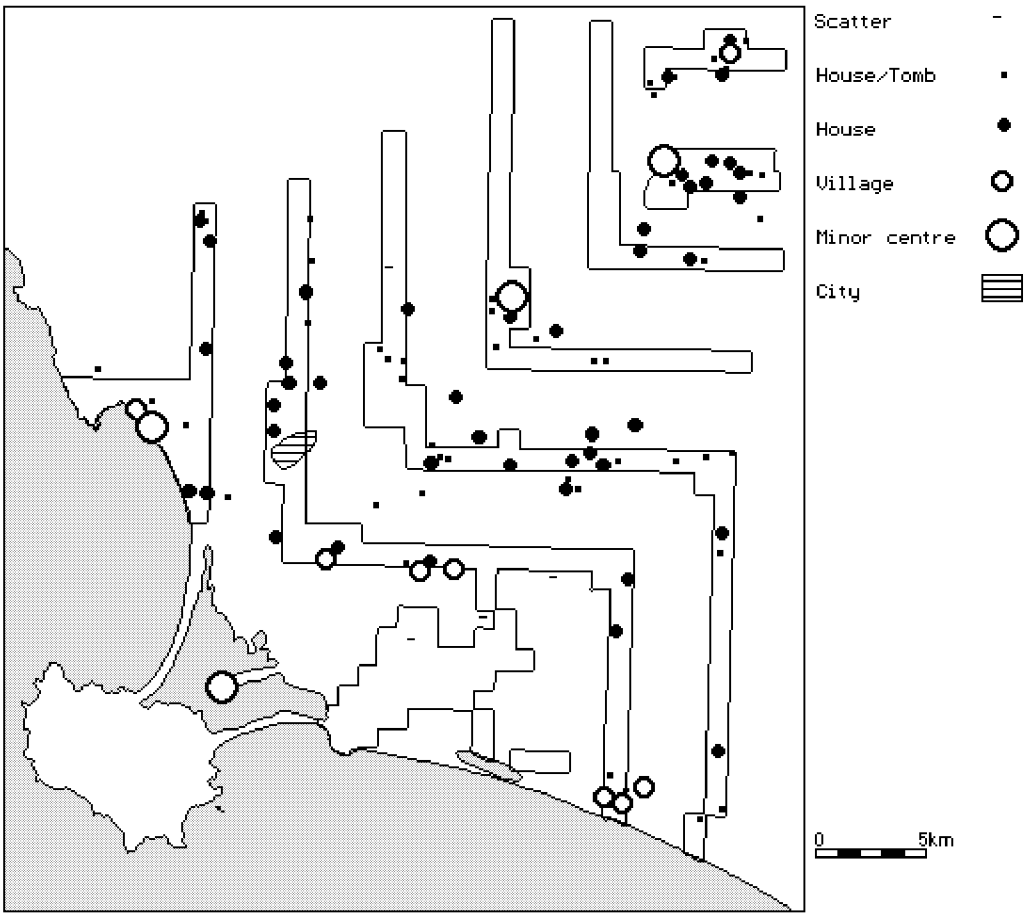


Fig.3.2.8 Minimum 5th century settlement pattern

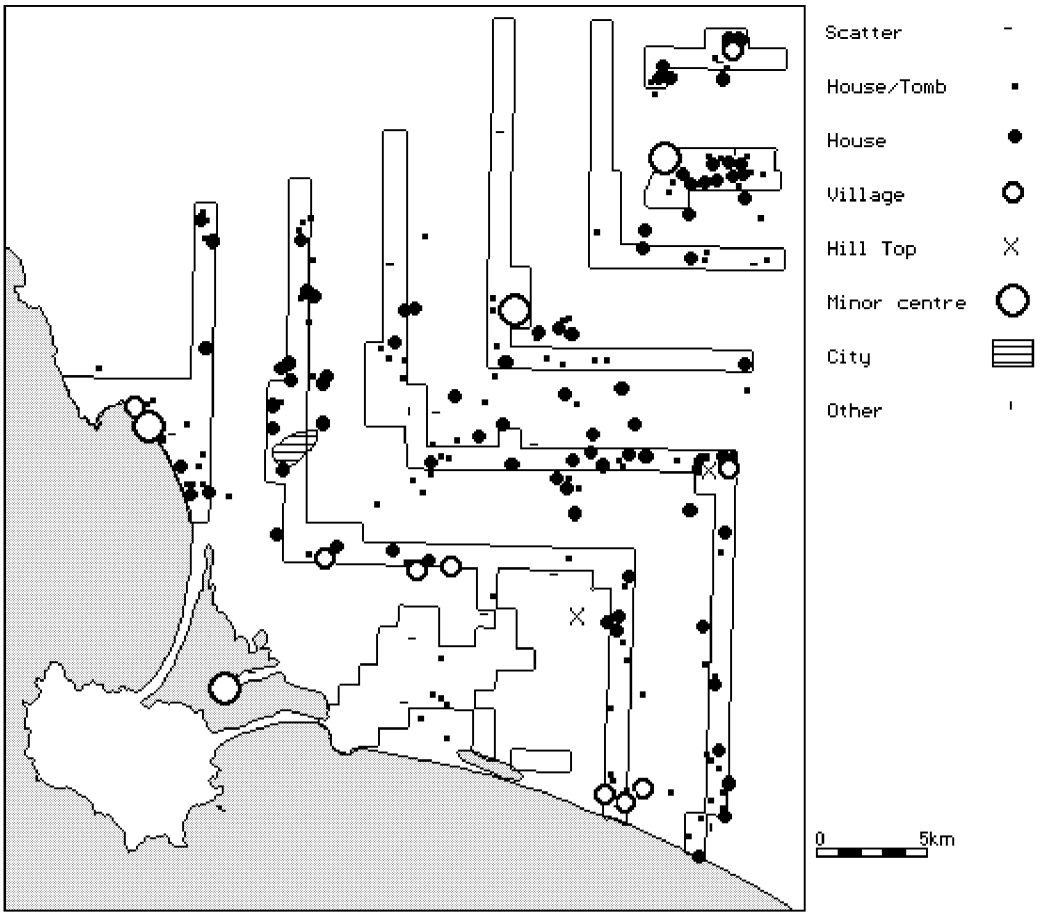


Fig.3.2.9 Maximum 5th century settlement pattern

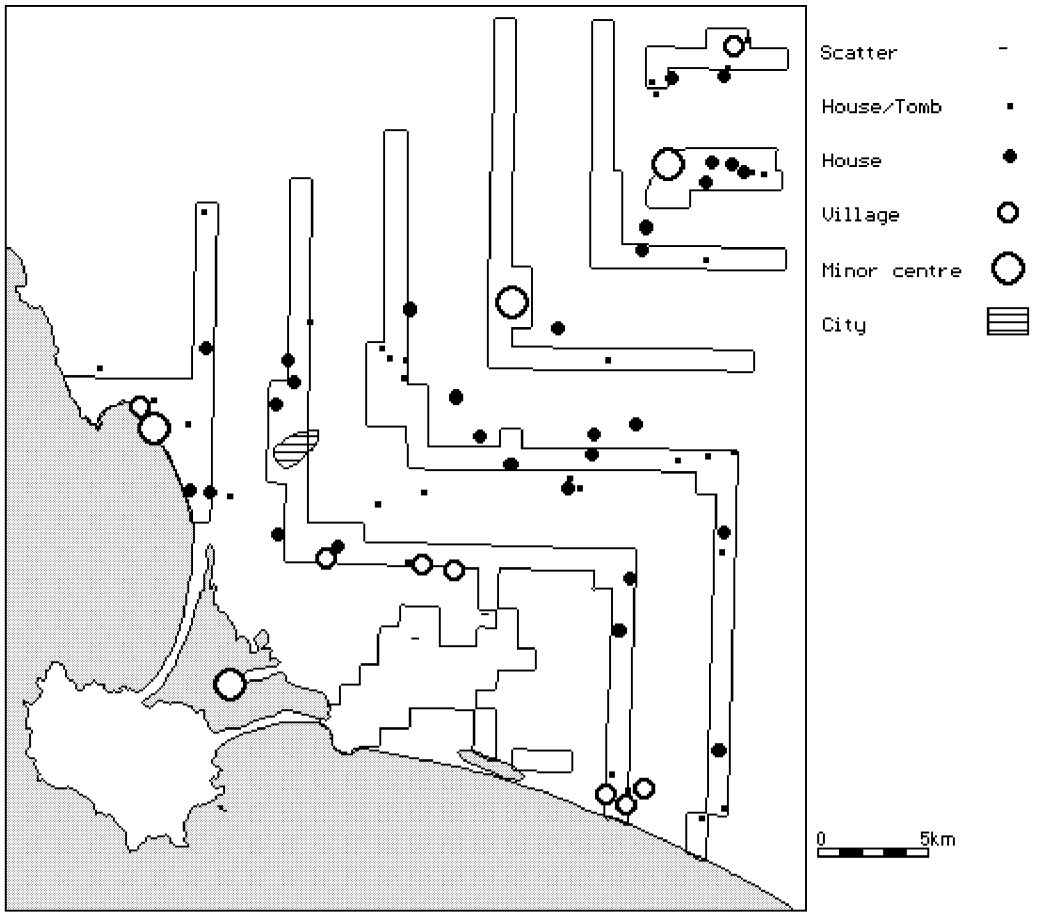


Fig.3.2.10 Minimum 4th century settlement pattern

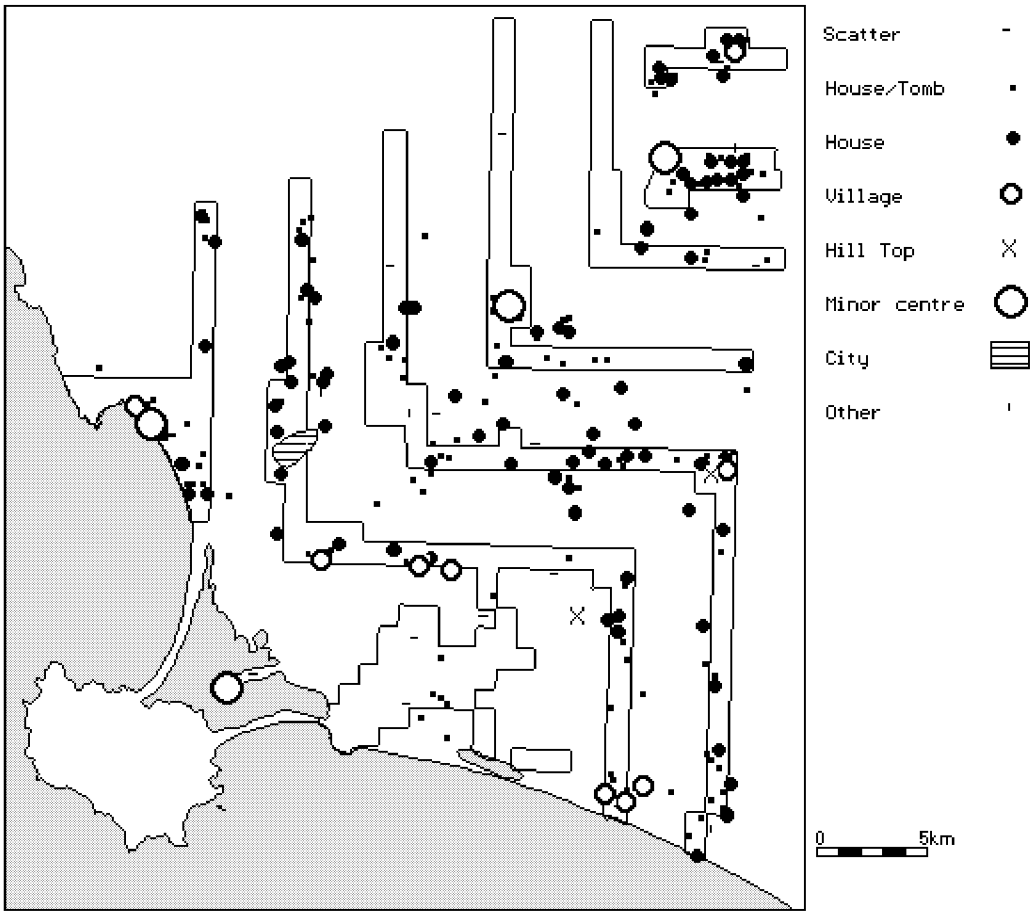


Fig.3.2.11 Maximum 4th century settlement pattern

4th Century BC

For the first time in the fourth century the number of settlements falls. There are no new foundations and the number of certain settlement sites falls by over 35%. The reduction in numbers seems to be generalised but settlement does clearly thin close to the minor centres in the upper valley. If the possibly occupied sites are considered there is virtually no change in the settlement pattern between the fifth and the fourth century.

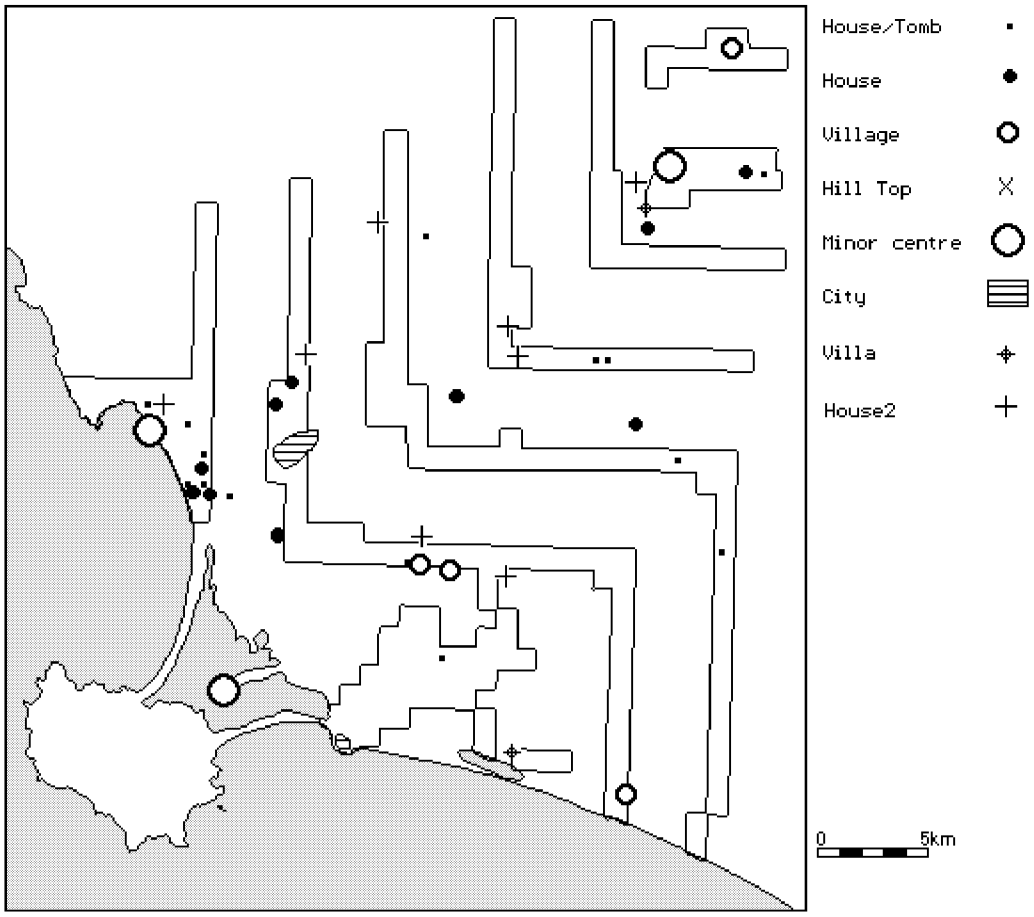


Fig.3.2.12 Minimum 3rd century settlement pattern

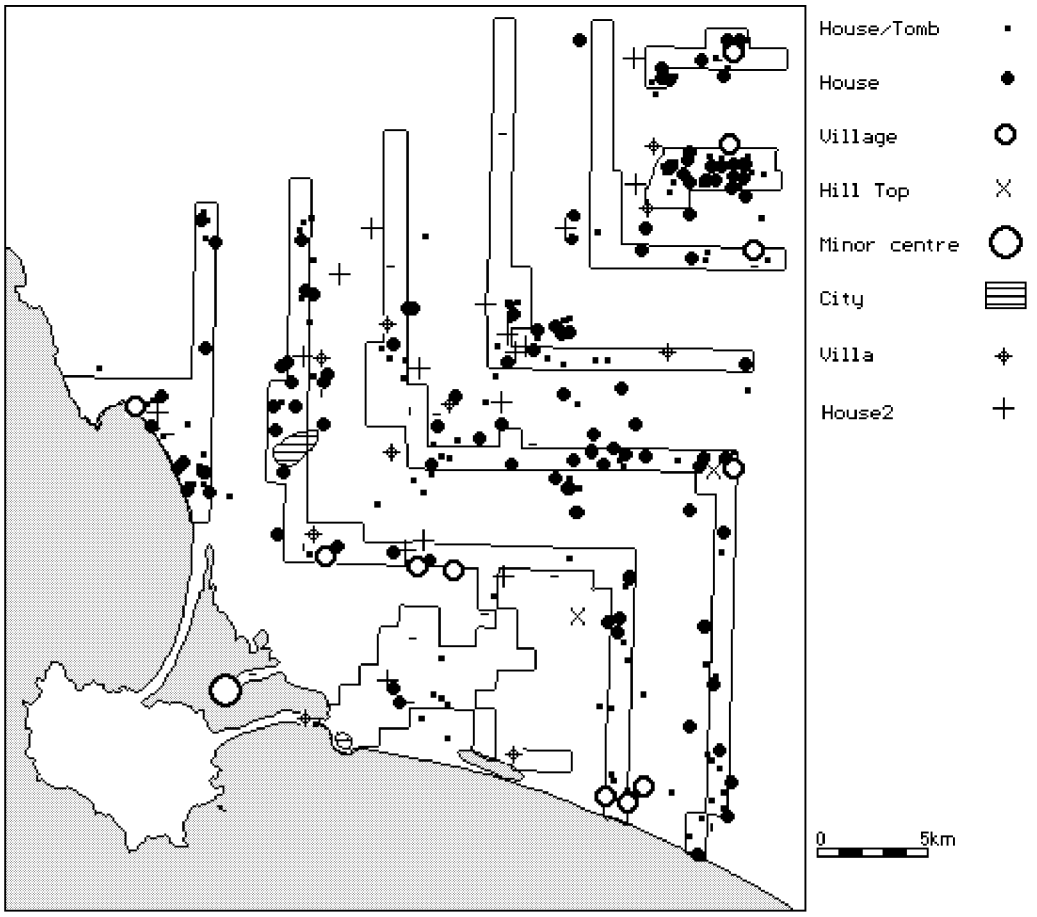


Fig.3.2.13 Maximum 3rd century settlement pattern

3rd Century BC

The settlement pattern presented for the third century is something of a hybrid: Doganella, which was occupied in the first quarter of the century is still included although it was probably destroyed by the Roman conquest *c.*280 BC. Likewise Saturnia is included, it too was probably destroyed, but was presumably still settled when it was created a Prefecture in 273 BC. Cosa is included since it was founded in that same year. Away from the centres the rural settlement is drastically reduced through out the valley, with the exception of the area around Talamonaccio. Some of the sample transects are completely unoccupied for the first time since the Iron age and even the villages on the coastal strip which had been occupied for at least five hundred years are now abandoned. Less than half of the sites survive from the previous century, and those that do tend to be the larger settlements, the centres or villages. This is clear evidence of the drastic effects of the Roman conquest on the settlement pattern in the Valley. There are, however, some new foundations, scattered thinly through the valley. Many of these are classified as House2 sites, but there are also two sites which go on to become villas. If the uncertainly dated sites are considered the pattern becomes less clear as both uncertainly dated Etruscan and uncertainly dated Roman sites are included.

2nd Century BC

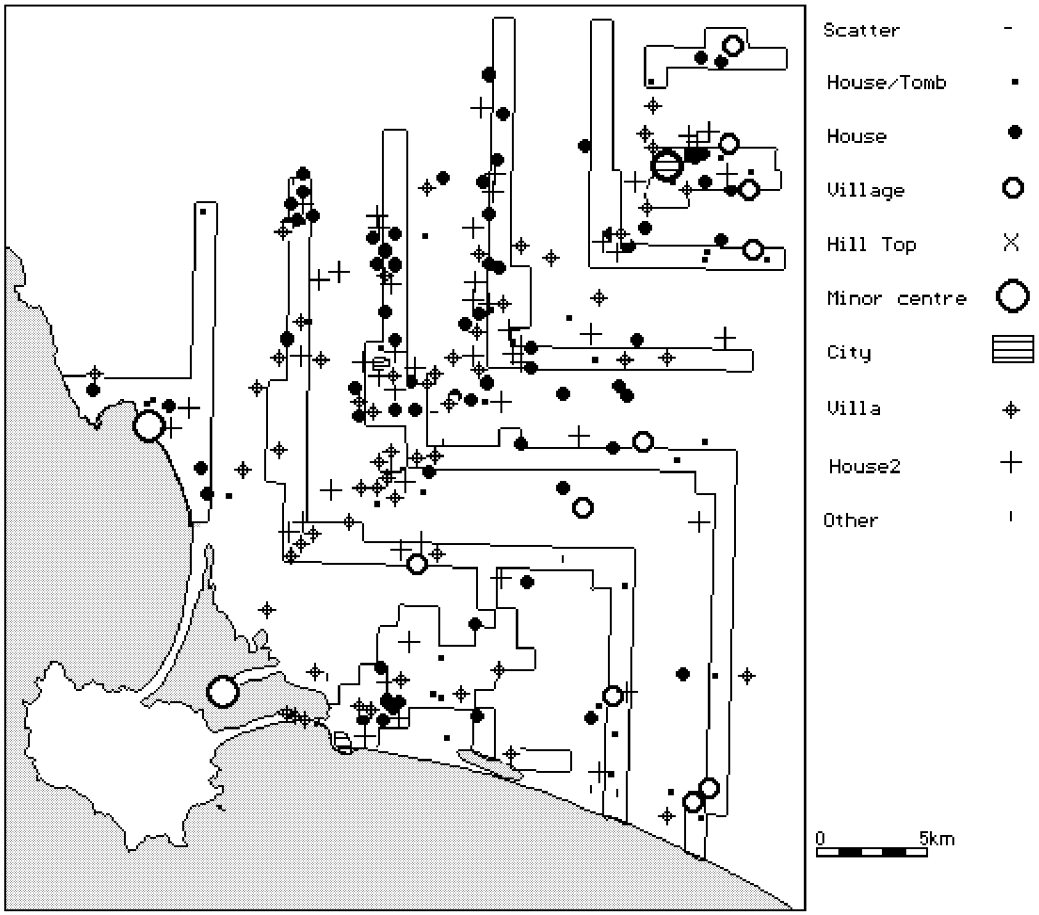


Fig.3.2.14 Minimum 2nd century settlement pattern

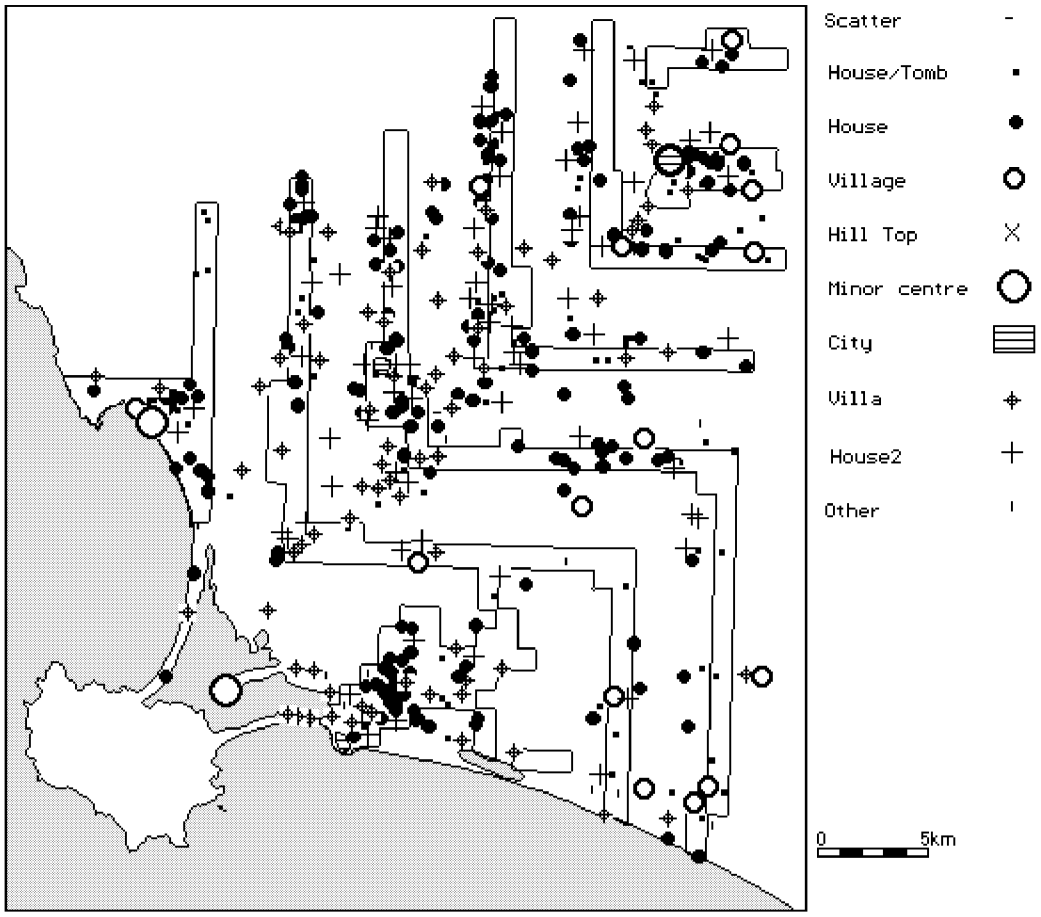


Fig.3.2.15 Maximum 2nd century settlement pattern

By the second century the settlement pattern has changed again. The only remnants of the Etruscan settlement pattern are the minor centres at Orbetello, Talamonaccio and Saturnia, and only the last of these is still occupied in the first century. In the second century there is a massive increase in the number of rural settlements The distribution of the settlements is different from that of the Etruscan period. Rural settlements seem to cluster around the sites of the Roman colonies of Cosa, Heba and Saturnia. This is most apparent around Cosa and Heba which were areas not densely settled in the Etruscan period. Here the settlement consists of a mixture of villa, house2 and house sites around the colonies. It is not clear from the survey evidence alone whether the sites classed as villas were actually villa sites in the second century BC, it would seem likely that many only grew to be villas in the later part of the first century. The structure of the settlement pattern around Saturnia is somewhat different, small farm sites cluster to the north east of the colony and villas are only found to the south west (Fentress in press). In addition a series of villages are founded at c.5 km from the colony. Also, for the first time, the hilly areas of the northern slopes of the valley are extensively settled. Villages also occur in the hills to the east of the Albegna and on the Coastal strip. Away from the colonies settlement is much thinner. Around the site of Doganella there are few settlements, but a single villa was found actually on the remains of the city. Consideration of the uncertainly dated sites increases the numbers of settlements but does nor significantly change the pattern.

Implications of the changes in the settlement pattern are further considered in terms of population and process of development below.

3.3. Settlement Patterns

Relationships between site locations and landscape

Site location may be viewed in two fundamental ways either considered from the viewpoint of an individual site in the landscape or from the viewpoint of the landscape which is partially occupied by sites. The first approach is characterised by site catchment analysis (e.g. Vita-Finzi and Higgs 1970) where all the territory within a certain distance (often taken as the distance of a one hour walk) of a settlement site is considered as conditioning the subsistence strategy and economy of the settlement site. Land within this territory is classified according to its suitability for pasture, arable purposes or wasteland and the proportions of each class of land is used to determine likely subsistence strategies of the occupants of the sites (Dennell 1987, 73-5). The technique has its critics, the major drawbacks are potential change in the natural environment since antiquity, the indirect relationship between land area and the economic importance of a particular land use, its ignorance of non-economic factors and the fact that it considers the site catchment area in isolation from the rest of the landscape and indeed the world (e.g. Hodder and Orton 1976, 229-36; Gaffney *et al.* 1985). Despite these criticisms the technique has achieved some popularity in the analysis of field survey results, particularly among prehistorians of Italy (e.g. Barker 1972; 1985; Malone and Stoddart 1994, 81-93). The technique is applied in these situations as none of the drawbacks listed above are held to be important in simple farming systems without complex land tenure (Malone and Stoddart 1994, 81-93). Attempts have been made to elaborate the technique to incorporate social as well as economic factors by employing site catchment techniques within the context of a settlement hierarchy (Gent and Dean 1986). However, this technique is not employed in this study because this work does concern complex agricultural and economic systems which were trading foodstuffs with other regions of the Mediterranean. Furthermore the Etruscan society was complex and capable of manipulating its own natural environment, one thinks immediately of *cuniculi* (Potter 1979, 85-7). A further reason it is not employed is that this study concerns a settlement system as a whole, not just individual settlements.

This point introduces the alternative view of the settlement pattern as a landscape inhabited by archaeological sites. In this approach the settlements are considered with reference to the entire landscape with the purpose of generalising about the locations of sites from their distribution within the landscape. In essence it is an analysis of the conformation of the landscape and the distribution of sites together. Thus a more general landscape analysis is performed and the locations of archaeological sites are considered with reference to that landscape. This approach, favoured in environmental studies, is now becoming more common, particularly with the development of computer based Geographical Information Systems capable of handling large spatially referenced data sets (Burrough 1986; Cliff and Ord 1981). An archaeological application of this approach has illuminated the Greek conquest of the island of Hvar in Croatia (Gaffney and Stancic 1992) and another, Hohokam agricultural systems (Kvamme 1992).

The approach taken here considers the locations of individual sites analysed with reference to a variety of natural criteria: altitude, slope, aspect and solid geology which have been introduced above. Other criteria which might have been used are proximity to water and to communications routes and soil types. The former is possible but the nature of closest water source to settlements is extremely difficult to ascertain. Water courses marked on the maps are inconsistently mapped, and it is not possible to differentiate seasonal torrents from perpetual streams. Springs and wells are also impossible to accurately locate, and here changes through time are also likely to be important. A final problem with using water was that both the Etruscans and Romans were able to store large amounts of rain water in cisterns. For these reasons water supply could not be used in the analysis. Soil type could not be used as the entire valley has not been surveyed in detail and so soil data was not uniformly available, some comfort may be taken from the fact that geology provides the parent materials for soil formation. Roads and communications are also important factors in settlement locations (Haggett *et al.* 1977, 64-96), but unfortunately can only be reliably reconstructed for the Roman period in the survey area and so could not be used in the diachronic analysis.

The purpose is to identify what kinds of location were used for settlements and how these changed through time. Data for the first three variables was derived from 1:100,000 topographic maps of the Istituto Geografico Militare and the geological information from the corresponding maps of the Servizio Geologico d'Italia. The method in each case is the same, the distribution of classes of each of the variables within the whole of sample transects are compared with the locations of the sites. If sites were randomly distributed through the landscape one would expect 20% of the sites to be located upon limestone, for example, if limestone occupied 20% of the sampled area. The observed distribution of sites is systematically compared with the expected distributions. The difference between the two distributions is measured with a χ^2 test (Shennan 1988, 65-76) which indicates if the difference is statistically significant. This technique provides a straight forward means of analysing qualities of the location (Kvamme 1992). The analysis may be taken further by considering statistics derived from the χ^2 statistic, Yule's Q provides a means of assessing whether sites are positively or negatively associated with a particular variable, and the strength of the association (varying between -1 and 1 and equalling 0 when there is no covariation) and ϕ^2 which varies between 0 when there is no relationship between the variables and 1 when there is a perfect relationship between the variables (Shennan 1988, 78-81). The technique is simple and will detect statistically significant associations between distributions of variables in the landscape and the distribution of the archaeological sites which may then be archaeologically interpreted.

The purpose of the analysis is first to identify any relationship between site and landscape and then to investigate how that relationship changes through time. A problem which must be addressed before the analysis can

proceed is the uncertainty in the dating of many of the sites. For this reason two sets of site data are considered for each century between the seventh and the second BC. Firstly, only the sites certainly occupied in that century and secondly the certainly occupied and the possibly occupied sites together are included in the analysis. This has the effective result of considering both a possible minimum number of sites occupied in a given century and a possible maximum number of sites. It does not remove the uncertainty in dating and contemporary occupation of sites inherent in field survey data, but it does place maxima and minima on the settlement pattern.

The calculations are tedious and only a single fully worked example is presented here, the other tests are presented as tables of results. The χ^2 statistic is calculated as

$$\chi 2 \frac{n(ad-bc)2}{(a+b)(c+d)(a+c)(b+d)}$$

where n is the sample size, and a,b,c and d refer to the cells of a contingency table labelled

a *b*
c *d*
(Shennan 1988, 74)

ϕ^2 is calculated as χ^2/n where n is the sample size and Q as

$$Q = \frac{ad-bc}{ad+bc}$$

where a,b,c and d refer to the cells of a contingency table labelled

a *b*
c *d*
(Shennan 1988, 78-80)

Altitude

The following example shows the data and results for an analysis of the sites certainly occupied in the seventh century BC and the altitude above sea level in 50m bands. The measurements are in terms of hectares as this is the resolution of the digitized topographic data. The same calculations were repeated for each time period and the maximum and minimum settlement patterns.

7th BC Minimum of occupied sites

Altitude (m)	0-49	50-99	100-49	150-99	200-49	250-99	300-49	350-99
Ha. in sample	9189	4758	3902	2528	2439	1522	895	587
Ha. containing site	14	13	7	5	7	1	0	0

Altitude (m)	400-49	450-99	500-49	550-99	600-49	650-99	Sum
Ha. in sample	336	410	292	154	117	14	27143
Ha. containing site	2	0	0	0	0	0	49
						Total	27192

0-49	+site	-site	Total			250-99	+site	-site	Total		
In range	14	9189	9203	$\chi 2=$	0.596	In range	1	1522	1523	$\chi 2=$	1.172
Out of range	35	18003	18038	$\phi 2=$	0.000	Out of range	48	25670	25718	$\phi 2=$	0.000
Total	49	27192	27241	Q=	-0.121	Total	49	27192	27241	Q=	-0.480

50-99	+site	-site	Total			300-49	+site	-site	Total		
In range	13	4758	4771	$\chi 2=$	2.762	In range	0	895	895	$\chi 2=$	1.668
Out of range	36	22434	22470	$\phi 2=$	0.000	Out of range	49	26297	26346	$\phi 2=$	0.000
Total	49	27192	27241	Q=	0.260	Total	49	27192	27241	Q=	-1.000

100-49	+site	-site	Total			350-99	+site	-site	Total		
In range	7	3902	3909	$\chi 2=$	0.000	In range	0	587	587	$\chi 2=$	1.081
Out of range	42	23290	23332	$\phi 2=$	0.000	Out of range	49	26605	26654	$\phi 2=$	0.000
Total	49	27192	27241	Q=	-0.003	Total	49	27192	27241	Q=	-1.000

150-99	+site	-site	Total			400-49	+site	-site	Total		
In range	5	2528	2533	$\chi 2=$	0.048	In range	2	336	338	$\chi 2=$	3.233
Out of range	44	24664	24708	$\phi 2=$	0.000	Out of range	47	26856	26903	$\phi 2=$	0.000
Total	49	27192	27241	Q=	0.052	Total	49	27192	27241	Q=	0.546

200-49	+site	-site	Total			450-99	+site	-site	Total		
In range	7	2439	2446	$\chi 2=$	1.691	In range	0	410	410	$\chi 2=$	0.750
Out of range	42	24753	24795	$\phi 2=$	0.000	Out of range	49	26782	26831	$\phi 2=$	0.000
Total	49	27192	27241	Q=	0.257	Total	49	27192	27241	Q=	-1.000

500-49	+site	-site	Total

In range	0	292	292	$\chi 2$=	0.532	600-49	+site	-site	Total	
Out of range	49	26900	26949	$\phi 2$=	0.000	In range	0	117	117	$\chi 2$= 0.212
Total	49	27192	27241	Q=	-1.000	Out of range	49	27075	27124	$\phi 2$= 0.000
						Total	49	27192	27241	Q= -1.000
550-99	+site	-site	Total							
In range	0	154	154	$\chi 2$=	0.279	650+	+site	-site	Total	
Out of range	49	27038	27087	$\phi 2$=	0.000	In range	0	14	14	$\chi 2$= 0.025
Total	49	27192	27241	Q=	-1.000	Out of range	49	27178	27227	$\phi 2$= 0.000
						Total	49	27192	27241	Q= -1.000

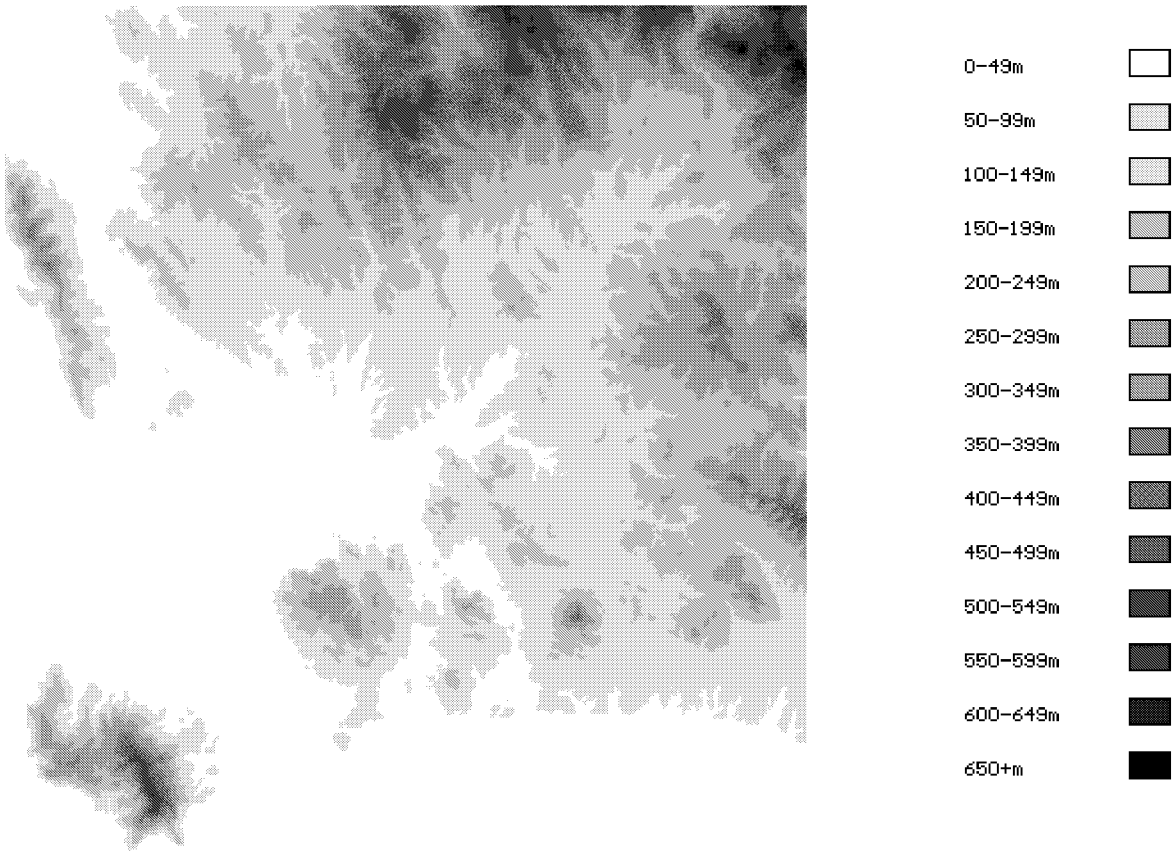


Fig. 3.3.1 Altitude above sea level

Within the sampled area altitude rises from the sea to above 650m. The largest category of land is that below 50m which is nearly 30% of the entire area. The distribution of altitude is presented below:

Table 3.3.1 Distribution of Altitude

m.	Area in valley (ha.)	Area in transect (ha.)
0-49	42,322	9,203
50-99	21,995	4,771
100-49	19,804	3,909
150-99	15,803	2,533
200-49	13,639	2,446
250-99	9,437	1,523
300-49	6,130	895
350-99	4,211	587
400-49	3,443	338
450-99	2,823	410
500-49	1,785	292
550-99	861	154
600-49	477	117
650-99	56	14
Total	142,786	27,192

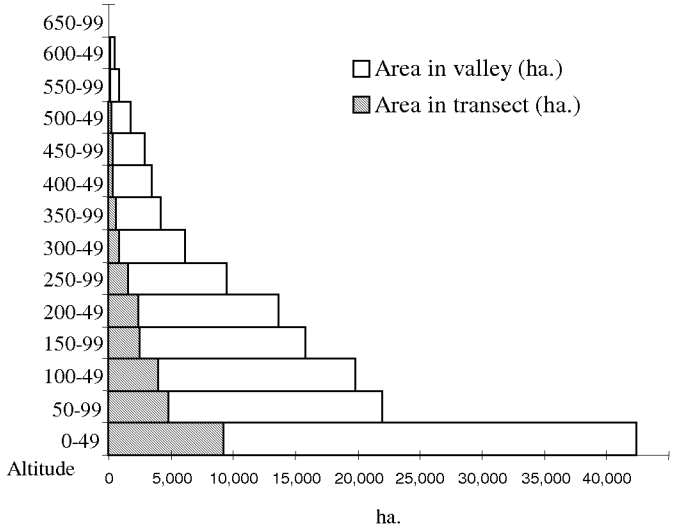


Fig 3.3.2 Distribution of altitude

Table 3.3.2 Distribution of altitude percentages

m.	% in valley (ha.)	Cumulative % in valley	% in transect (ha.)	Cumulative % in transect
0-49	29.64%	29.64%	33.84%	33.84%
50-99	15.40%	45.04%	17.55%	51.39%
100-49	13.87%	58.91%	14.38%	65.77%
150-99	11.07%	69.98%	9.32%	75.08%
200-49	9.55%	79.53%	9.00%	84.08%
250-99	6.61%	86.14%	5.60%	89.68%
300-49	4.29%	90.43%	3.29%	92.97%
350-99	2.95%	93.38%	2.16%	95.13%
400-49	2.41%	95.79%	1.24%	96.37%
450-99	1.98%	97.77%	1.51%	97.88%
500-49	1.25%	99.02%	1.07%	98.95%
550-99	0.60%	99.62%	0.57%	99.52%
600-49	0.33%	99.95%	0.43%	99.95%
650-99	0.04%	99.99%	0.05%	100.00%

Table 3.3.3 χ^2 statistics for locations and altitude

Summary of χ^2 for altitude of settlement locations

	0-49	50-99	100-49	150-99	200-49	250-99	300-49	350-99	400-49	450-99	500-49	550-99	600-49	650-99	m.
7th BC Min	0.596	2.762	0.000	0.048	1.691	1.172	1.668	1.081	3.233	0.750	0.532	0.279	0.212	0.025	
7th BC Max	***126.722***	**(22.191)**	2.457	1.808	0.937	6.562	(9.502)	5.531	1.142	5.174	3.669	1.925	1.730	0.174	
6th BC Min	***226.042***	**(17.911)**	**(18.516)**	**(11.529)**	(6.727)	(10.281)	(8.166)	5.294	0.316	3.674	2.605	1.367	0.001	0.124	
6th BC Max	***126.722***	**(22.191)**	2.457	1.808	0.937	6.562	(9.502)	5.531	1.142	5.174	3.669	1.925	1.730	0.174	
5th BC Min	***126.722***	**(22.191)**	2.457	1.808	0.937	6.562	(9.502)	5.531	1.142	5.174	3.669	1.925	1.730	0.174	
5th BC Max	***126.722***	**(22.191)**	2.457	1.808	0.937	6.562	(9.502)	5.531	1.142	5.174	3.669	1.925	1.730	0.174	
4th BC Min	***190.999***	**(27.629)**	(9.000)	1.732	6.256	(10.801)	(8.472)	5.493	1.423	3.811	2.703	1.418	0.004	0.128	
4th BC Max	***126.722***	**(22.191)**	2.457	1.808	0.937	6.562	(9.502)	5.531	1.142	5.174	3.669	1.925	1.730	0.174	
3rd BC Min	***227.466***	**(19.835)**	(10.614)	4.748	**(18.889)**	**(11.821)**	(7.961)	5.161	2.945	3.581	2.539	1.333	0.000	0.121	
3rd BC Max	***128.820***	**(17.584)**	3.171	2.279	1.289	(7.093)	(9.871)	5.767	1.248	5.342	3.788	1.988	1.580	0.180	
2nd BC Min	**(12.529)**	***33.735***	0.206	*9.072*	0.026	4.211	2.107	3.543	2.021	2.458	1.743	0.915	0.144	0.083	
2nd BC Max	5.381	***26.297***	0.003	5.798	1.181	6.432	3.618	2.295	1.518	3.928	2.785	1.462	0.739	0.132	

Figures are $\chi 2$ scores for the association between altitude and settlement location in the transects.
Scores significant at 0.01 i.e. > 6.635 are underlined, those significant at 0.001 i.e. > 10.828 are **bold**.
Figures in *italic* indicate significant attraction, those in (parentheses) significant aversion.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Table 3.3.4 ϕ^2 statistics for locations and altitude

Summary of ϕ^2 for altitude of settlement locations

	0-49	50-99	100-49	150-99	200-49	250-99	300-49	350-99	400-49	450-99	500-49	550-99	600-49	650-99	m.
7th BC Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7th BC Max	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
6th BC Min	0.008	0.001	0.001	0	0	0	0	0	0	0	0	0	0	0	
6th BC Max	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
5th BC Min	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
5th BC Max	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
4th BC Min	0.007	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
4th BC Max	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
3rd BC Min	0.008	0.001	0	0	0.001	0	0	0	0	0	0	0	0	0	
3rd BC Max	0.005	0.001	0	0	0	0	0	0	0	0	0	0	0	0	
2nd BC Min	0.001	0.002	0	0	0	0	0	0	0	0	0	0	0	0	
2nd BC Max	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	

Figures are $\phi 2$ scores for the association between altitude and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Table 3.3.5 Yule's*Q* statistics locations and altitude

Summary of Yule's *Q* for altitude of settlement locations

	0-49	50-99	100-49	150-99	200-49	250-99	300-49	350-99	400-49	450-99	500-49	550-99	600-49	650-99	m.
7th BC Min	-0.121	0.260	-0.003	0.052	0.257	-0.480	-1	-1	0.546	-1	-1	-1	-1	-1	
7th BC Max	0.537	-0.435	-0.134	-0.142	-0.101	-0.418	-0.839	-0.763	-0.355	-1	-1	-1	0.360	-1	
6th BC Min	0.769	-0.471	-0.554	-0.546	-0.387	-0.752	-1	-1	-0.196	-1	-1	-1	-0.012	-1	
6th BC Max	0.537	-0.435	-0.134	-0.142	-0.101	-0.418	-0.839	-0.763	-0.355	-1	-1	-1	0.360	-1	
5th BC Min	0.537	-0.435	-0.134	-0.142	-0.101	-0.418	-0.839	-0.763	-0.355	-1	-1	-1	0.360	-1	
5th BC Max	0.537	-0.435	-0.134	-0.142	-0.101	-0.418	-0.839	-0.763	-0.355	-1	-1	-1	0.360	-1	
4th BC Min	0.712	-0.615	-0.338	-0.164	-0.361	-0.760	-1	-1	-0.514	-1	-1	-1	-0.030	-1	
4th BC Max	0.537	-0.435	-0.134	-0.142	-0.101	-0.418	-0.839	-0.763	-0.355	-1	-1	-1	0.360	-1	
3rd BC Min	0.778	-0.512	-0.390	-0.308	-0.839	-0.865	-1	-1	-1	-1	-1	-1	0.001	-1	
3rd BC Max	0.534	-0.368	-0.152	-0.158	-0.118	-0.431	-0.844	-0.769	-0.369	-1	-1	-1	0.346	-1	
2nd BC Min	-0.327	0.435	0.049	0.308	0.022	-0.514	-0.459	-1	-1	-1	-1	-1	0.188	-1	
2nd BC Max	-0.162	0.333	0.005	0.215	0.109	-0.498	-0.484	-0.474	-0.526	-1	-1	-1	0.294	-1	

Figures areYule's *Q* scores for the association between altitude and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

The χ^2 statistic clearly indicates that there are various relationships between altitude and site location. In all but the 7th century minimum settlement distribution and the 2nd century distribution, settlements are significantly positively associated with the low lands below 50m and significantly negatively associated with land between 50 and 100m. Settlements are negatively associated with land between 250 and 350m above sea level in all of the minimum settlement patterns except that for the 5th century. The positive association between the low lands and the sites and the negative association with the higher land is particularly marked in the minimum sixth century settlement pattern. After the Roman conquest the situation changes and the minimum settlement pattern is significantly negatively associated with the land below 50m, but settlements are positively associated with the land between 50 and 100m. The ϕ^2 values are small due to the large difference between the area in the transects and the area of the sites, but along with the values for Yule's Q they provide an indication of the strength of the associations which is fairly constant.

Slope

Slopes have been measured as an average of blocks of land 300m square. These have then been classified into four bands, negligible for slopes 0-8%, slight for 8-16%, moderate for 16-25% and steep for slopes over 25% (USDA 1951). Within the sample area slopes are generally

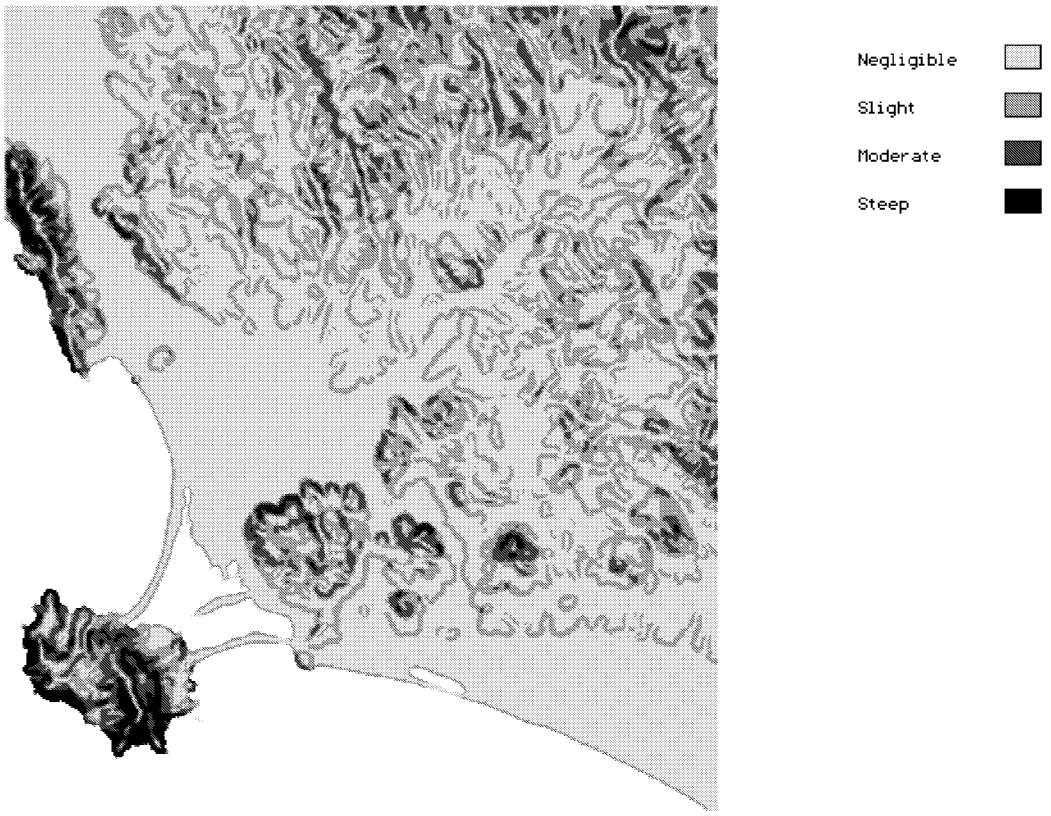


Fig. 3.3.3 Slopes in the valley.

Table 3.3.6 Distribution of slopes

Slope	Area in valley (ha.)	Area in transect (ha.)
Negligible	81,748	16,448
Slight	45,888	8,640
Moderate	11,861	1,918
Steep	3,289	212
Total	142,786	27,218

Table 3.3.7 Distribution of slopes percentages

Percentage distribution of slope in valley

	% in valley	Cumulative % in valley	% in transect	Cumulative % in transect
Negligible	57.25%	57.25%	60.43%	60.43%
Slight	32.14%	89.39%	31.74%	92.17%
Moderate	8.31%	97.70%	7.05%	99.22%
Steep	2.30%	100.00%	0.78%	100.00%

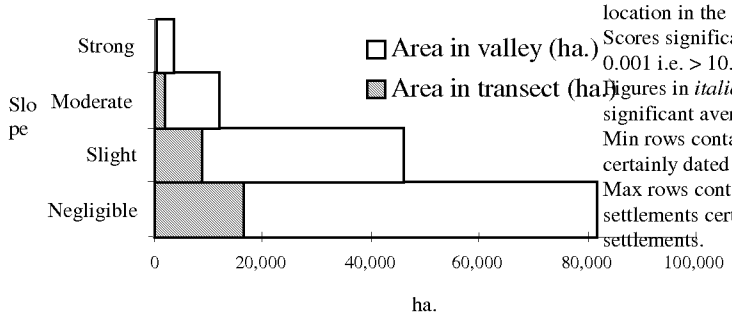


Table 3.3.8 χ^2 statistics for locations and slope

Summary of χ^2 for slope and settlement locations

	Negligible	Slight	Moderate	Steep
7th BC Min	4.879	1.140	6.482	0.385
7th BC Max	***38.013***	**(18.021)**	(7.259)	2.653
6th BC Min	***65.625***	**(47.801)**	3.901	1.884
6th BC Max	***38.013***	**(18.021)**	(7.259)	2.653
5th BC Min	***38.013***	**(18.021)**	(7.259)	2.653
5th BC Max	***38.013***	**(18.021)**	(7.259)	2.653
4th BC Min	***46.665***	**(24.479)**	(9.506)	1.947
4th BC Max	***38.013***	**(18.021)**	(7.259)	2.653
3rd BC Min	***48.171***	**(28.344)**	(7.101)	1.837
3rd BC Max	***27.415***	**(13.562)**	3.186	2.894
2nd BC Min	4.883	*8.516*	0.157	1.261
2nd BC Max	1.161	3.997	0.243	2.014

Figures are χ^2 scores for the association between slope and settlement location in the transects.
Scores significant at 0.01 i.e. > 6.635 are underlined, those significant at 0.001 i.e. > 10.828 are bold.
Figures in *italic* indicate significant attraction, those in (parentheses) significant aversion.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Fig. 3.3.4 Distribution of slopes in the valley

Table 3.3.9 ϕ^2 statistics for locations and slope

Summary of ϕ^2 for slope and settlement locations

	Negligible	Slight	Moderate	Steep
7th BC Min	0	0	0	0
7th BC Max	0.001	0.001	0	0
6th BC Min	0.002	0.002	0	0
6th BC Max	0.001	0.001	0	0
5th BC Min	0.001	0.001	0	0
5th BC Max	0.001	0.001	0	0
4th BC Min	0.002	0.001	0	0
4th BC Max	0.001	0.001	0	0
3rd BC Min	0.002	0.001	0	0
3rd BC Max	0.001	0	0	0
2nd BC Min	0	0	0	0
2nd BC Max	0	0	0	0

Figures are ϕ^2 scores for the association between slope and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Table 3.3.10 Yule's *Q* statistics for locations and slope

Summary of Yule's Q for slope and settlement locations

	Negligible	Slight	Moderate	Steep
7th BC Min	-0.303	0.155	0.442	-1
7th BC Max	0.367	-0.275	-0.383	-1
6th BC Min	0.597	-0.584	-0.319	-1
6th BC Max	0.367	-0.275	-0.383	-1
5th BC Min	0.367	-0.275	-0.383	-1
5th BC Max	0.367	-0.275	-0.383	-1
4th BC Min	0.486	-0.387	-0.572	-1
4th BC Max	0.367	-0.275	-0.383	-1
3rd BC Min	0.510	-0.436	-0.483	-1
3rd BC Max	0.295	-0.225	-0.217	-1
2nd BC Min	-0.172	0.227	-0.065	-1
2nd BC Max	-0.068	0.128	-0.064	-1

Figures are Yule's *Q* scores for the association between slope and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

negligible or slight. The distribution of slopes is presented below.

The χ^2 statistic clearly indicates that there are relationships between slope and site location. In all but the 7th century minimum settlement distribution and the 2nd century distribution, settlements are significantly associated with negligible slopes and significantly not located on slight slopes. There are also relationships of negative association between the sites and moderate slopes but these are only significant at the 0.01 level. After the Roman conquest associations are not common and in the statistic for the minimum second century BC settlement pattern sites are positively associated with slight slopes, but only at the 0.01 significance level. The ϕ^2 values are small due to the large difference between the area in the transects and the area of the sites, but along with the values for Yule's Q they provide an indication of the strength of the attraction which is highest in the sixth century and the third.

Aspect

Aspect is calculated as the average direction a slope faces over blocks of land 300m square. The aspect has been classified into none (i.e. level ground), north to north east, north east to east, east to south east etc. The distribution of aspects is presented below.

Table 3.3.11 Distribution of aspects

	Area in valley (ha.)	Area in transect (ha.)
None	33,030	6,187
N-NE	10,150	1,675
NE-E	12,832	2,072
E-SE	13,087	2,757
SE-S	12,276	2,711
S-SW	18,651	4,025
SW-W	19,702	3,563
W-NW	14,511	2,736
NW-N	8,547	1,492
Total	142,786	27,218

Table 3.3.12 Distribution of aspects percentages

Percentage distribution of aspect in valley

	% in valley	Cumulative % in valley	% in transect	Cumulative % in transect
None	23.13%	23.13%	22.73%	22.73%
N-NE	7.11%	30.24%	6.15%	28.88%
NE-E	8.99%	39.23%	7.61%	36.49%
E-SE	9.17%	48.40%	10.13%	46.62%
SE-S	8.60%	57.00%	9.96%	56.58%
S-SW	13.06%	70.06%	14.79%	71.37%
SW-W	13.80%	83.86%	13.09%	84.46%
W-NW	10.16%	94.02%	10.05%	94.51%
NW-N	5.99%	100%	5.48%	99.99%

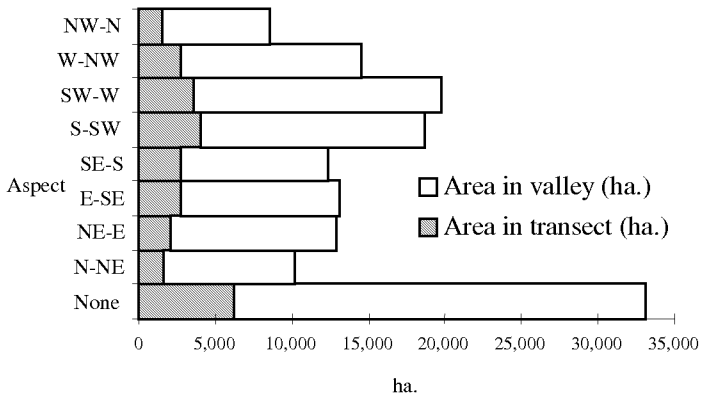


Fig.3.3.5 Distribution of aspects

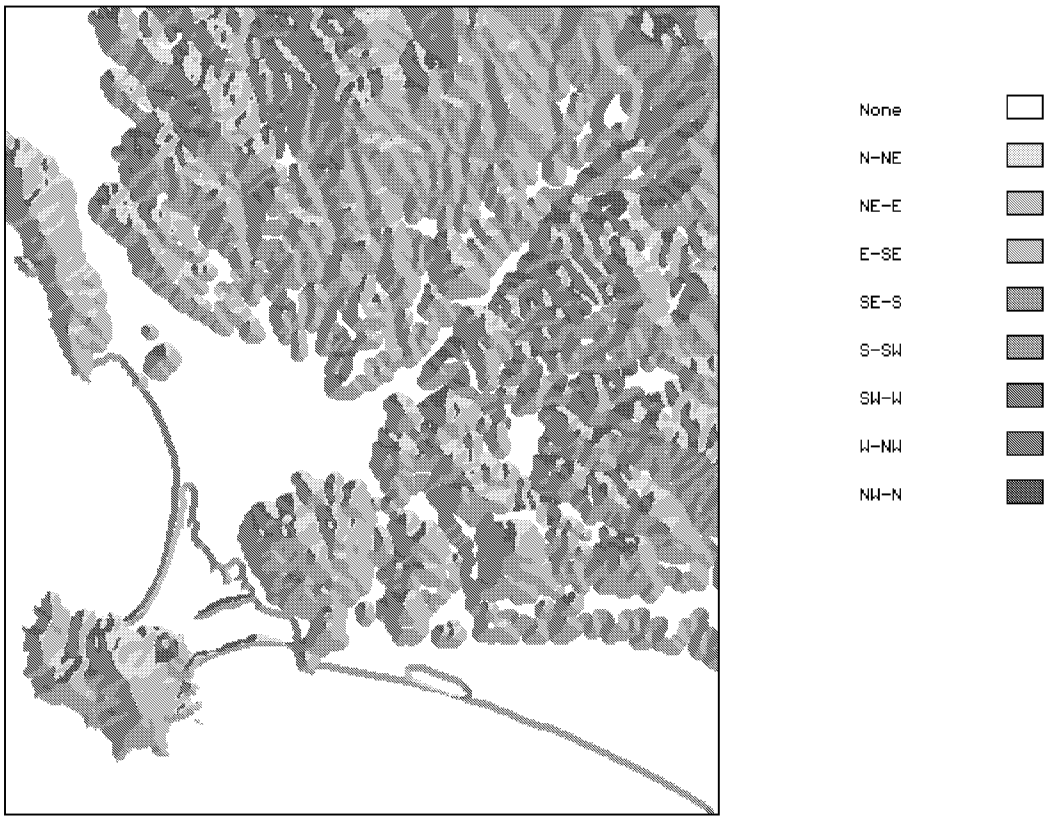


Fig.3.3.6 Aspects in the valley

Table 3.3.13 χ^2 statistics for locations and aspect

Summary of χ^2 for aspect and settlement locations

	None	N-NE	NE-E	E-SE	SE-S	S-SW	SW-W	W-NW	NW-N
7th BC Min	1.894	0.000	0.873	5.538	0.809	1.224	0.448	3.743	*7.330*
7th BC Max	***256.563***	(6.995)	**(14.609)**	**(35.830)**	0.760	**(16.703)**	(7.426)	6.160	0.633
6th BC Min	***387.997***	(9.944)	**(15.639)**	**(27.025)**	**(11.638)**	**(18.057)**	**(15.104)**	3.724	2.079
6th BC Max	***256.563***	(6.995)	**(14.609)**	**(35.830)**	0.760	**(16.703)**	(7.426)	6.160	0.633
5th BC Min	***256.563***	(6.995)	**(14.609)**	**(35.830)**	0.760	**(16.703)**	(7.426)	6.160	0.633
5th BC Max	***256.563***	(6.995)	**(14.609)**	**(35.830)**	0.760	**(16.703)**	(7.426)	6.160	0.633
4th BC Min	***347.872***	(10.445)	**(16.288)**	**(25.726)**	0.567	**(20.897)**	**(19.353)**	**(11.189)**	3.318
4th BC Max	***256.563***	(6.995)	**(14.609)**	**(35.830)**	0.760	**(16.703)**	(7.426)	6.160	0.633
3rd BC Min	***381.216***	**(15.334)**	**(13.285)**	**(24.160)**	0.174	**(29.585)**	**(14.315)**	(8.529)	(9.631)
3rd BC Max	***232.046***	(7.408)	**(13.856)**	**(35.045)**	0.235	**(19.598)**	3.931	1.780	0.835
2nd BC Min	3.841	5.085	3.415	5.856	***22.832***	*7.567*	0.510	1.048	1.724
2nd BC Max	4.429	2.237	1.670	4.247	***18.508***	3.932	3.822	0.004	1.901

Figures are χ^2 scores for the association between aspect and settlement location in the transects.
Scores significant at 0.01 i.e. > 6.635 are underlined, those significant at 0.001 i.e. > 10.828 are bold.
Figures in *italics* indicate significant attraction, those in (parentheses) significant aversion.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Table 3.3.14 ϕ^2 statistics for locations and aspect

Summary of ϕ^2 for aspect and settlement locations

	None	N-NE	NE-E	E-SE	SE-S	S-SW	SW-W	W-NW	NW-N
7th BC Min	0	0	0	0	0	0	0	0	0
7th BC Max	0.009	0	0.001	0.001	0	0.001	0	0	0
6th BC Min	0.014	0	0.001	0.001	0	0.001	0.001	0	0
6th BC Max	0.009	0	0.001	0.001	0	0.001	0	0	0
5th BC Min	0.009	0	0.001	0.001	0	0.001	0	0	0
5th BC Max	0.009	0	0.001	0.001	0	0.001	0	0	0
4th BC Min	0.013	0	0.001	0.001	0	0.001	0.001	0	0
4th BC Max	0.009	0	0.001	0.001	0	0.001	0	0	0

3rd BC Min	0.014	0.001	0	0.001	0	0.001	0.001	0	0
3rd BC Max	0.008	0	0.001	0.001	0	0.001	0	0	0
2nd BC Min	0	0	0	0	0.001	0	0	0	0
2nd BC Max	0	0	0	0	0.001	0	0	0	0

Figures are ϕ^2 scores for the association between aspect and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Table 3.3.15 Yule's *Q* statistics for locations and aspect

Summary of Yule's *Q* for aspect and settlement locations

	None	N-NE	NE-E	E-SE	SE-S	S-SW	SW-W	W-NW	NW-N
7th BC Min	-0.271	-0.003	-0.320	-1.000	-0.259	0.193	0.128	0.337	0.485
7th BC Max	0.667	-0.409	-0.590	-0.949	0.075	-0.405	-0.265	-0.276	-0.105
6th BC Min	0.831	-0.676	-0.815	-1.000	-0.524	-0.533	-0.515	-0.250	-0.252
6th BC Max	0.667	-0.409	-0.590	-0.949	0.075	-0.405	-0.265	-0.276	-0.105
5th BC Min	0.667	-0.409	-0.590	-0.949	0.075	-0.405	-0.265	-0.276	-0.105
5th BC Max	0.667	-0.409	-0.590	-0.949	0.075	-0.405	-0.265	-0.276	-0.105
4th BC Min	0.800	-0.685	-0.820	-0.931	0.076	-0.577	-0.599	-0.495	-0.330
4th BC Max	0.667	-0.409	-0.590	-0.949	0.075	-0.405	-0.265	-0.276	-0.105
3rd BC Min	0.833	-1.000	-0.727	-0.927	0.044	-0.776	-0.505	-0.428	-0.741
3rd BC Max	0.629	-0.401	-0.533	-0.864	0.041	-0.425	-0.174	-0.129	-0.117
2nd BC Min	-0.206	-0.550	-0.359	-0.424	0.421	0.253	0.079	0.122	-0.286
2nd BC Max	-0.172	-0.235	-0.175	-0.258	0.333	0.156	0.161	0.006	-0.228

Figures are Yule's *Q* scores for the association between aspect and settlement location in the transects.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. settlements certainly dated to that century and poorly dated or undated settlements.

Through the Etruscan period (with the exception of the minimum settlement pattern in the seventh century) the settlement locations are significantly positively associated with the ground with no aspect. This association is clearly related to the previously considered variable of slope, for where there is no slope there is no aspect, it is also related to altitude as the low land, below 50m, tends to be the flat valley bottom and terraces where there is no slope or aspect. In the Roman period the association with the areas with no aspect no longer exists. The other major observation to be made is that there seems to be a generalised negative association between any aspect and settlement locations in the Etruscan period, with the exception of south east to south and west to north. The Q scores indicate that there is a particularly strong negative association with east to south easterly aspect. This might be related to the fact that the prevailing weather systems come from westerly directions and so easterly aspects are more likely to be in rain shadows. In the roman period there is less significant association between aspect and the settlement locations, however, there is a positive association with south facing locations.

Geology

The geological classes are taken from the 1:100,000 geological maps and are fully described above. The distribution of the geology is presented below.

Table 3.3.16 Distribution of geology

Geology	Area of mapped geology (ha.)	Area in transect (ha.)
1	28,229	4,900
2	3,777	1,234
3	15,387	3,737
4	2,144	785
5	667	431
6	8,190	2,164
7	6,467	1,479
8	5,284	1,480
9	21,119	2,214
10	1,267	232
11	10,437	2,342
12	12,140	2,250
13	1,161	4
14	12,771	3,207
15	4,983	435
Total	134,023	26,894

3.3.17 Distribution of geology percentages

Percentage distribution of geological classes in valley

Geology	% in valley	Cumulative % in valley	% in tr
1	21.06%	21.06%	18.22%
2	2.82%	23.88%	4.59%
3	11.48%	35.36%	13.90%
4	1.60%	36.96%	2.92%
5	0.50%	37.46%	1.60%
6	6.11%	43.57%	8.05%
7	4.83%	48.40%	5.50%
8	3.94%	52.34%	5.50%
9	15.76%	68.10%	8.23%
10	0.95%	69.05%	0.86%
11	7.79%	76.84%	8.71%
12	9.06%	85.90%	8.37%
13	0.87%	86.77%	0.01%
14	9.53%	96.30%	11.92%
15	3.72%	100.02%	1.62%
			100.00%

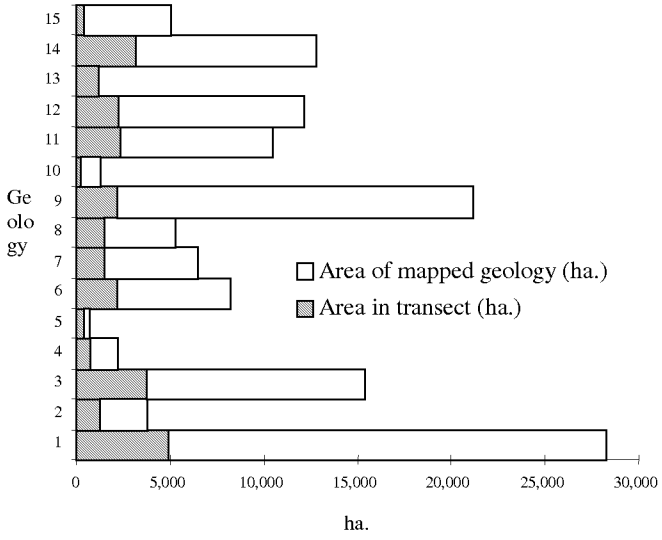


Fig.3.3.7 Distribution of geology

Table 3.3.18 χ^2 statistics for locations and geology

Summary of χ^2 scores for geology and settlement locations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7th BC Min	0.486	2.348	2.446	0.129	1.941	*7.188*	0.692	0.183	0.278	***104.153***	1.301	2.540	0.007	0.279	0.802
7th BC Max	0.121	(10.676)	***387.130***	0.857	0.031	3.390	0.012	(10.619)	**(15.532)**	5.875	**(15.678)**	**(16.013)**	0.051	**(15.407)**	5.616
6th BC Min	**(11.119)**	(7.838)	***561.808***	2.400	0.196	3.973	5.478	8.470	7.756	***11.878***	**(18.977)**	**(16.076)**	0.036	**(17.132)**	3.995
6th BC Max	0.121	(10.676)	***387.130***	0.857	0.031	3.390	0.012	(10.619)	**(15.532)**	5.875	**(15.678)**	**(16.013)**	0.051	**(15.407)**	5.616
5th BC Min	0.121	(10.676)	***387.130***	0.857	0.031	3.390	0.012	(10.619)	**(15.532)**	5.875	**(15.678)**	**(16.013)**	0.051	**(15.407)**	5.616
5th BC Max	0.121	(10.676)	***387.130***	0.857	0.031	3.390	0.012	(10.619)	**(15.532)**	5.875	**(15.678)**	**(16.013)**	0.051	**(15.407)**	5.616
4th BC Min	0.036	(10.007)	***537.657***	2.575	0.244	(7.850)	4.560	**(12.511)**	**(12.762)**	***11.263***	**(21.710)**	**(20.696)**	0.037	**(21.525)**	4.112
4th BC Max	0.121	(10.676)	***387.130***	0.857	0.031	3.390	0.012	(10.619)	**(15.532)**	5.875	**(15.678)**	**(16.013)**	0.051	**(15.407)**	5.616
3rd BC Min	0.513	**(11.392)**	***556.613***	5.194	3.857	**(16.586)**	(9.845)	**(11.752)**	**(13.367)**	***12.440***	**(20.446)**	**(19.487)**	0.035	**(13.267)**	3.894
3rd BC Max	0.065	(6.145)	***333.308***	1.338	0.135	2.131	0.035	(9.261)	**(18.017)**	4.760	**(15.267)**	**(16.963)**	0.055	(8.282)	6.112
2nd BC Min	2.536	0.275	***16.345***	2.388	0.131	2.058	0.959	0.977	0.861	***31.955***	3.853	(8.888)	0.024	0.081	1.005
2nd BC Max	1.047	4.493	5.030	***12.197***	0.308	1.154	0.060	3.827	0.512	***15.423***	1.426	(7.945)	0.038	1.172	2.443

Figures are $\chi 2$ scores for the association between geology and settlement location in the transects.
Scores significant at 0.01 i.e. > 6.635 are underlined, those significant at 0.001 i.e. > 10.828 are bold.
Figures in *italics* indicate significant attraction, those in (brackets) significant aversion.
Min rows contain the minimum number of settlements i.e. only settlements certainly dated to that century.
Max rows contain the maximum possible number of settlements i.e. those certainly dated to that century and poorly dated or undated.

Table 3.3.19 ϕ^2 statistics for locations and geology

Variation in ϕ^2 through time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7th BC Min	0	0	0	0	0	0	0	0	0	0.004	0	0	0	0	0
7th BC Max	0	0	0.014	0	0	0	0	0	0.001	0	0.001	0.001	0	0.001	0
6th BC Min	0	0	0.021	0	0	0	0	0	0	0	0.001	0	0	0	0
6th BC Max	0	0	0.014	0	0	0	0	0	0.001	0	0.001	0.001	0	0.001	0
5th BC Min	0	0	0.014	0	0	0	0	0	0.001	0	0.001	0.001	0	0.001	0
5th BC Max	0	0	0.014	0	0	0	0	0	0.001	0	0.001	0.001	0	0.001	0
4th BC Min	0	0	0.020	0	0	0	0	0	0	0	0.001	0.001	0	0.001	0
4th BC Max	0	0	0.014	0	0	0	0	0	0.001	0	0.001	0.001	0	0.001	0
3rd BC Min	0	0	0.021	0	0	0.001	0	0	0.001	0	0.001	0.001	0	0	0
3rd BC Max	0	0	0.012	0	0	0	0	0	0.001	0	0.001	0.001	0	0	0
2nd BC Min	0	0	0.001	0	0	0	0	0	0	0.001	0	0	0	0	0
2nd BC Max	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0

Table 3.3.20 Yule's *Q* statistics locations and geology

Variation in Yule's Q through time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7th BC Min	-0.141	-1.000	-0.423	-0.179	0.450	0.445	0.213	-0.153	-0.155	0.904	-0.381	-0.627	-1.000	0.108	-1.000
7th BC Max	-0.025	-0.688	0.739	-0.175	-0.040	-0.219	0.013	-0.593	-0.577	0.425	-0.557	-0.583	-1.000	-0.440	-1.000
6th BC Min	-0.339	-0.705	0.857	-0.411	-0.128	-0.295	-0.468	-0.646	-0.449	0.557	-0.840	-0.759	-1.000	-0.598	-1.000
6th BC Max	-0.025	-0.688	0.739	-0.175	-0.040	-0.219	0.013	-0.593	-0.577	0.425	-0.557	-0.583	-1.000	-0.440	-1.000
5th BC Min	-0.025	-0.688	0.739	-0.175	-0.040	-0.219	0.013	-0.593	-0.577	0.425	-0.557	-0.583	-1.000	-0.440	-1.000
5th BC Max	-0.025	-0.688	0.739	-0.175	-0.040	-0.219	0.013	-0.593	-0.577	0.425	-0.557	-0.583	-1.000	-0.440	-1.000
4th BC Min	-0.016	-0.846	0.845	-0.423	-0.142	-0.450	-0.404	-0.871	-0.629	0.547	-0.919	-0.916	-1.000	-0.693	-1.000
4th BC Max	-0.025	-0.688	0.739	-0.175	-0.040	-0.219	0.013	-0.593	-0.577	0.425	-0.557	-0.583	-1.000	-0.440	-1.000
3rd BC Min	0.059	-1.000	0.859	-0.753	-1.000	-0.823	-0.744	-0.864	-0.678	0.566	-0.915	-0.911	-1.000	-0.508	-1.000
3rd BC Max	-0.018	-0.429	0.699	-0.216	-0.083	-0.159	0.021	-0.503	-0.605	0.389	-0.514	-0.572	-1.000	-0.282	-1.000
2nd BC Min	0.148	-0.109	0.348	0.271	-0.128	-0.252	-0.200	-0.202	-0.150	0.722	-0.355	-0.656	-1.000	-0.036	-0.450
2nd BC Max	0.079	0.247	0.178	0.405	-0.160	-0.138	0.033	-0.352	-0.087	0.583	-0.149	-0.432	-1.000	-0.114	-0.617

Key

1	Alluvium	2	Detritus	3	Pleistocene deposits
4	Travertine	5	Lacustrine limestone	6	Pliocene sands & clay
7	Pliocene clay & marl	8	Miocene deposits	9	Sandstone & marl
10	Limestone & marl	11	Shale & limestone	12	Cretaceous marl & limestone
13	Jurassic limestone	14	Dolomitic limestone	15	Clastic deposits

The χ^2 scores reveal a positive association between the Pleistocene deposits (class 3) and the settlement locations in all but the minimum seventh century settlement pattern. Other associations are less consistent. In all but the fifth century the minimum settlement patterns are positively associated with Palaeogene limestones and marls (10), however, these rocks are rare forming less than 1% of the valley. Negative associations are more frequent. The negative association between settlements and the detritus is not surprising since these areas are often unstable, and in the upper valley at least they are often prone to land slides. Miocene deposits (8) have a negative association with Etruscan settlements as do the sandstones and marls (9), the shale and limestone (11), and the Cretaceous marl and limestone (12). The waterless Dolomitic limestone hills also have a negative association with the settlement in the Etruscan period.

Discussion and development

The purpose of this analysis has been to characterise certain elements of the relationship between landscape and settlement patterns. The aim has not been to create a causal inference of the form 'the Etruscans usually put their settlements on Pleistocene deposits' which is not necessarily indicated by the figures, but rather to look at aspects of the landscape at each site and compare that with the landscape of the valley as a whole. Only four components of the landscape have been considered, but there are many others such as soil, rainfall, frost-free days etc. that may contribute in a variety of ways which have not been taken into account. The criteria which have been considered have been chosen because the data was readily available and land forms and geology are fundamental parts of the physical landscape. So far each aspect has been considered in isolation, but each is only a part of the landscape, and should best be considered in combination with the other variables. Indeed all of these criteria are closely related, slope and aspect cannot exist without one another and both may be derived from the spatial distribution of altitude and will therefore be spatially autocorrelated. Geology too has relationships with altitude, for example alluvial deposits are almost by definition found on valley bottoms. It would be possible to carry the statistical analysis further by considering partial coefficients which examine triads of variables where one is controlled, or even employ log-linear models to explore the relationships further (Shennan 1988, 82-100). However more complex techniques do not necessarily guarantee clearer results (e.g. Wheatley 1996).

Here a spatial approach will be adopted where the observed relationships between each element of the landscape and the settlements are used to identify the areas in the valley which seem to be associated with a settlement pattern. The technique is based upon that used in cartographic modelling to provide land evaluation maps (Burroughs 1986, 93-101) and proceeds as follows. Areas of the map found to be associated with the settlement are identified for each variable. The resulting maps are overlaid upon each other , and areas of the resultant map where all the variables coincide are deemed to be the areas which have multiple associations with the settlement pattern (Fig. 3.3.8). Two forms of map may be produced one for areas of positive association and the second for negative association.

To generate the models only the minimum settlement patterns, and associations significant at 0.01 (i.e. 1 in 100 probability of being a chance association) were used. A drawback with this method of creating a model is that the variables are not directly comparable and the variables cannot be reliably weighted since it is not possible to determine if aspect should be given more importance than altitude, for example (Burrough 1986, 100-1). To solve this problem an association with a class of variable was given a score of 1, the scores for the individual maps of the

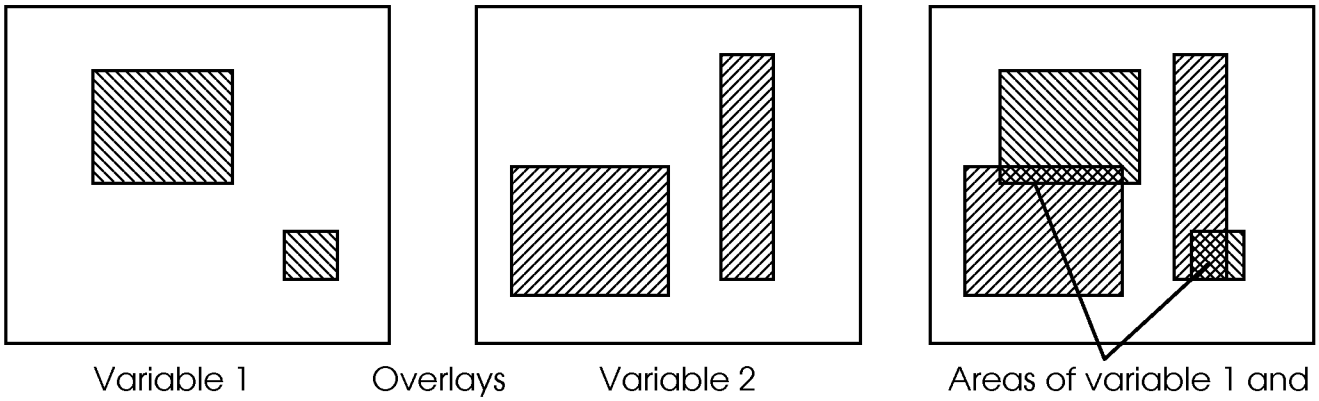


Fig. 3.3.8 Map overlay for cartographic modelling.

associations were added to produce an index of association between the landscape and the settlement pattern. Thus a score of four indicates that 4 associations coincide at that point on the map and a score of 1 indicates only a single association at that point.

To simplify the analysis and interpretation the settlement history was divided into three sections, deriving from the pattern of association with the variables. The seventh century; the sixth to the third; and the second centuries, coinciding with the pre-state, the Etruscan and the Roman settlement patterns.

Interpretation of the Models of settlement locations

In the seventh century there was generally very little association detected between the landscape variables and the settlement pattern, there were no negative associations and only limited positive association in the geology. Therefore the model is of limited use since it derives from a single set of associations.

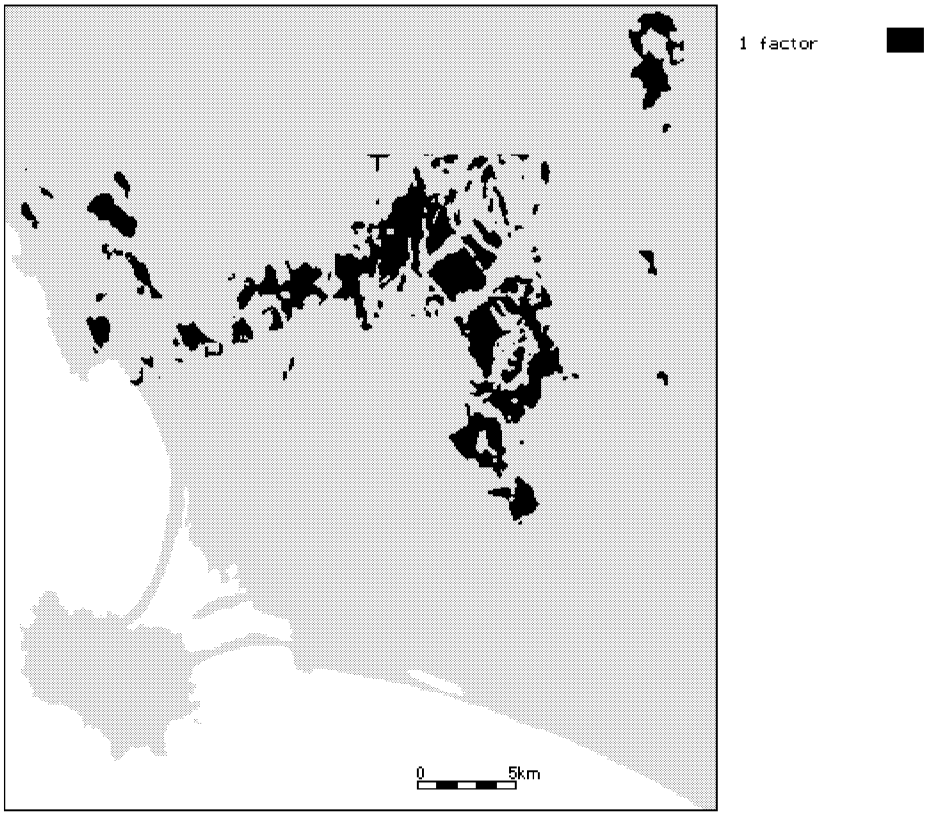


Fig.3.3.9 Model of areas with a positive association with 7th century settlement (grey indicates the land mass).

The model defines a rather unlikely looking swathe of land in the hilly areas of the middle valley defined solely by geology. The model is weak, particularly when compared with later models, suggesting that settlement in this period was not particularly associated with any of the elements of landscape considered here.

In the central period between the sixth and the third centuries two models are possible both based on all four landscape elements.

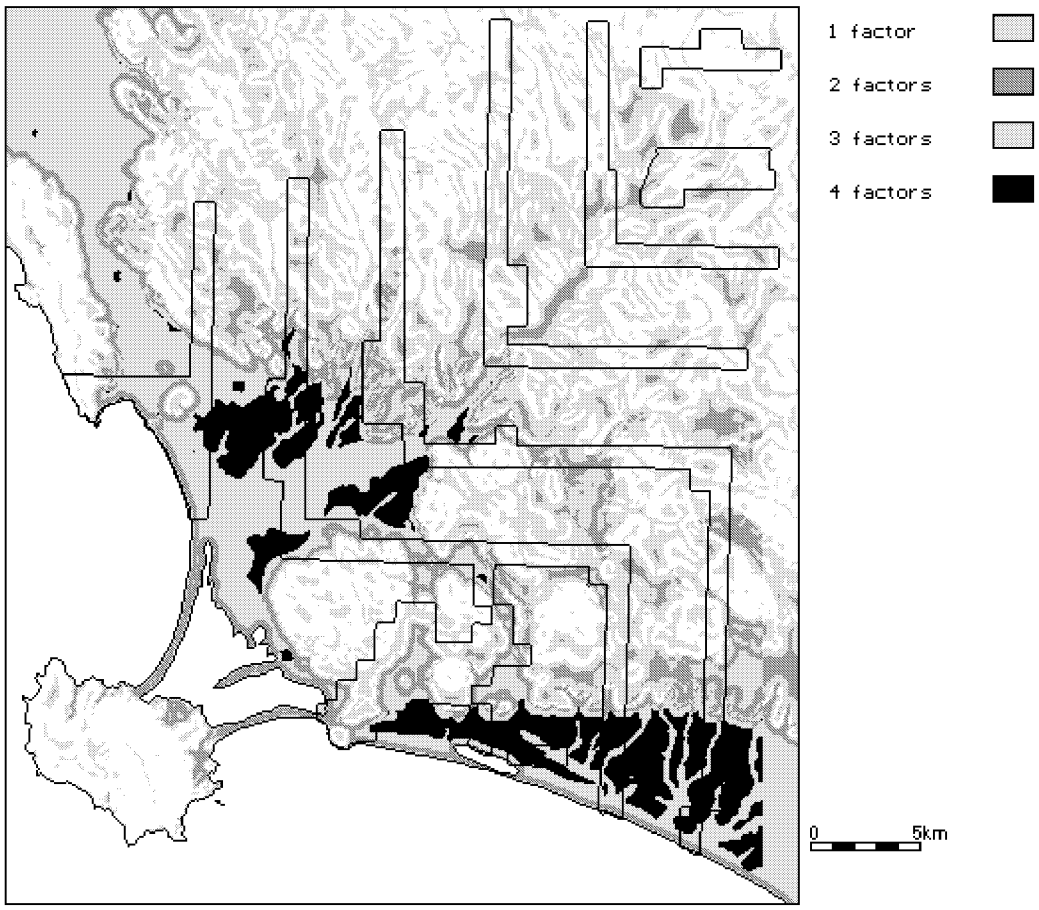


Fig.3.3.10 Model of areas with a positive association with Etruscan settlement

The model of positive association highlights the Pleistocene terraces in the Albegna valley and along the coastal strip as the areas associated on a broad basis with the settlement pattern (4 factors). The lowest lying areas of the valley and coastal strip have 3 positive associations as do many of the small low basins to the east of the Albegna and to a lesser extent small areas of the upper valley. A striking feature of the model is that many of the areas with four associations are very close to those with no associations suggesting that the landscape diversity that this represents may also be a consideration in the settlement pattern. This is most obvious in the coastal strip and the southern part of the Albegna valley where the red areas are close to the white areas in the model.

The model of the negative associations with the settlement pattern between the sixth and the third centuries is to some extent the inverse of the model for the positive associations (Fig. 3.3.11). The areas with a combination of four negative associations are concentrated in the hilly areas, particularly the hills between the coastal strip and the Albegna valley, Monte Argentario, around Manciano, the Monti dell'Ucellina and the northern slopes of the Albegna valley. A large area of the upper valley, around Saturnia does not have negative factors. Some of the terraces in the middle valley and the basins to the east of the Albegna have a single negative association which derives from their altitude. This conflicts with the model of positive association where these areas generally have three positive associations. The model emphasises the proximity of areas with positive and negative associations just like the previous model.

Together the two models illustrate the association between the Etruscan settlements and the low lying areas of the coastal strip and the Albegna valley. This is where the city at Doganella lies and many of the settlements. However the association between the landscape and settlement is also evident in the upper valley, as it is in the small basins and valleys between the Albegna valley and the coastal strip. A comparison between these models and the previous model for the seventh century suggests that there is an increased association between settlements and the low lying areas of the valley, particularly the Pleistocene terraces. This indicates an increased exploitation of the lowlands and may also be due to land reclamation schemes undertaken in the flat lands of the valley during the later seventh and the early sixth centuries when this land was occupied. The models equally highlight the lack of settlement towards the northern watershed of the valley around Scansano and a similar situation to the east around Manciano.

For the period immediately following the Roman conquest the models change. The model of positive association is based on all four elements of the landscape but the negative one is based on only two (Fig. 3.3 12).

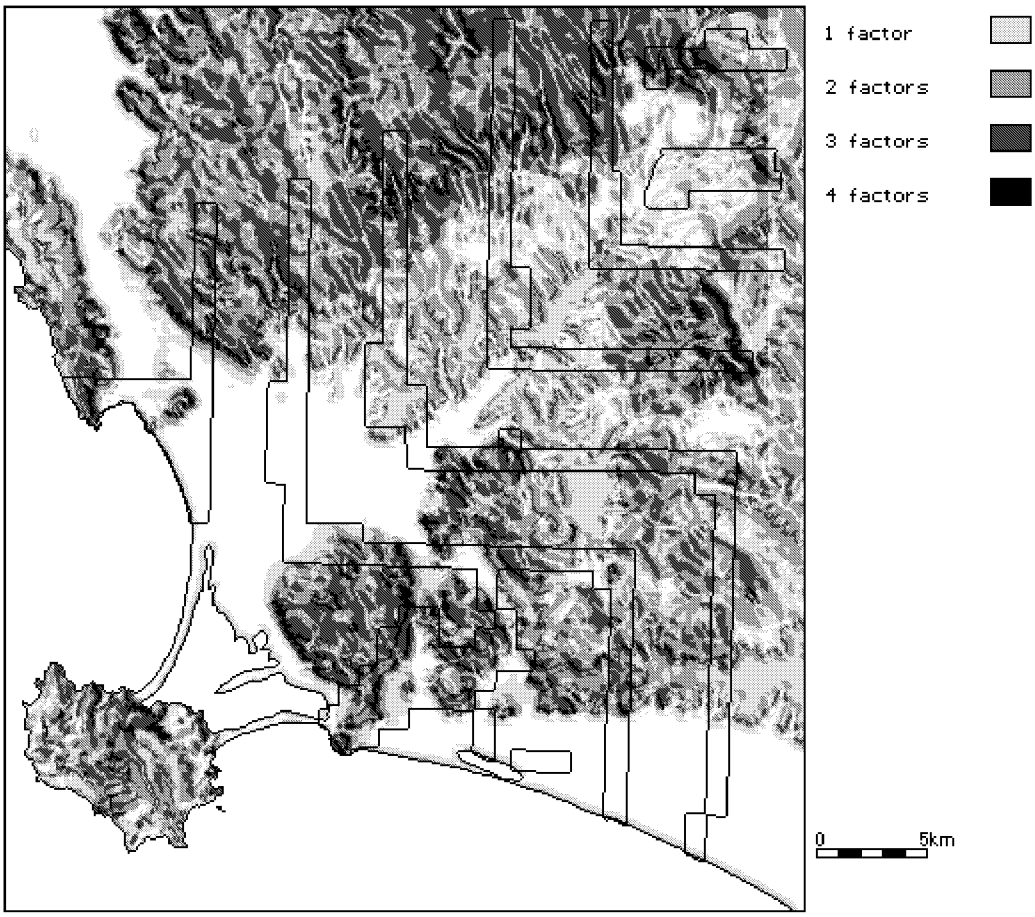


Fig.3.3.11 Model of areas with a negative association with Etruscan settlement

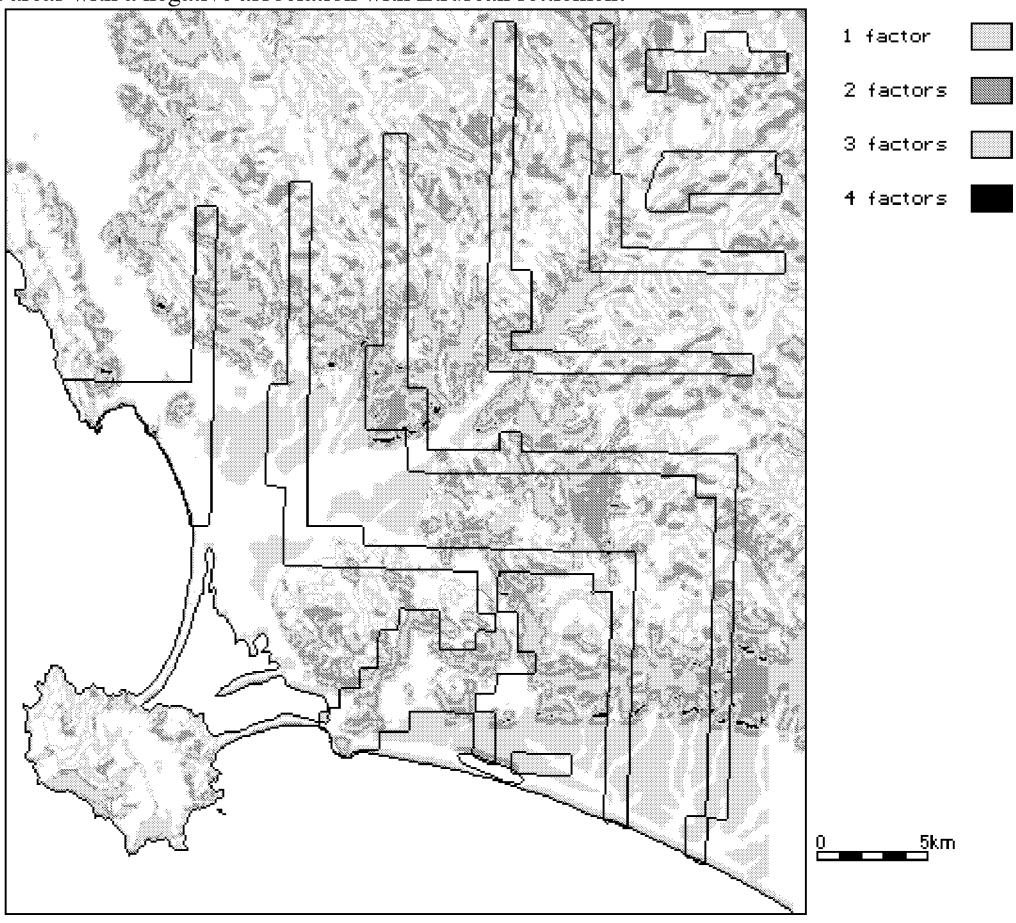


Fig.3.3.12 Model of areas with a positive association with Roman settlement

The model is very different from that generated for the Etruscan period. The low lying coastal areas show less association and the areas with most associated factors are more widely spread through the valley. Generally the areas with four factors are found on the lower south facing slopes in both the valley and the coastal strip. One of the highest concentrations of these areas is around Magliano in Toscana where the Roman colony of Heba was founded during the second century. This raises the possibility that Heba was carefully located in a landscape that was understood rather than being placed at random in the valley, for the location of Heba is somewhat perplexing. It has no topographical advantages, does not lie on any of the major Roman roads, although it is reasonably close to the lowest ford on the Albegna (but before it was founded the river had been bridged by the Via Aurelia) and had no Etruscan predecessor. Seen as part of a more general settlement pattern the siting of Heba may be better explained, such an understanding of the landscape might have been gained during laying out the centuriation of the valley.

The hills to the north of the Albegna, which were negatively associated with the Etruscan settlement now have some positive factors. This is reflected in the locations of settlements which are found in this area for the first time in the Roman period. Around the site of the minor centre of Talamonaccio, which survived the Roman conquest, are a number of areas with multiple positive associations. Another area with positive associations is the Elsa valley.

Close to Cosa, on the slopes of the Val d'Oro and the valley of the Radicata there are areas with positive associations. Further to the east on the coastal strip the higher Pleistocene terraces is an extensive area with positive associations.

The model of negative associations is derived from the geology and altitude (Fig. 3.3.13). Overall few negative associations with the roman settlement and landscape are revealed. The negative association of the lowest lying land contrasts with the positive association with the alluvium. The few areas where the negative associations combine are at low altitude with Cretaceous marl and limestone geology.

Comparison between the models for the Etruscan and early Roman periods shows that there are changes in the relationships between the landscape and the settlements. The city at Doganella dominates the Etruscan model producing associations with both the land below 50m and the Pleistocene deposits. This suggests that the low, fertile terraces were associated with settlements. These level areas are suited to both arable cultivation and to a lesser extent viticulture. The alluvial plains are best suited to arable cultivation. In the Roman period the city at Doganella was no more and the positively associated areas move to the lower south facing slopes of the valley. This might be related to the intensification of viticulture documented by the production of wine amphorae in the valley and the Ager Cosanus as the low south facing slopes are well suited to

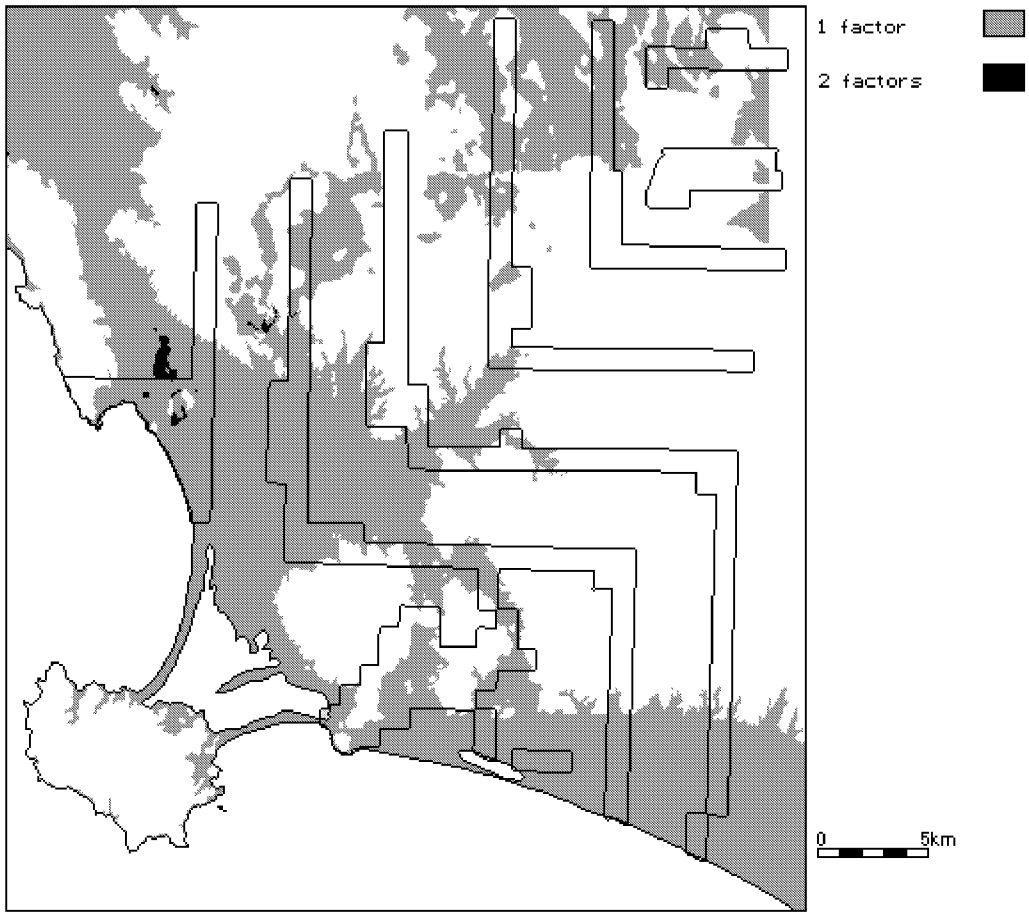


Fig.3.3.13 Model of areas with a negative association with Roman settlement

vine cultivation, but the alluvial flood plain is not. In both periods the proximity of positive areas to areas with negative association with settlement is part of the diversity of Mediterranean landscapes which enables exploitation of a variety of environments within small areas. The negative areas, often hilly and waterless, may nevertheless provide either rough pasture or woodland, if not settlement locations.

Inter-site relationships

Hierarchy

The settlement sites identified by the survey have been seen to fall into a variety of types which can be arranged in to a hierarchy ranging from the city to very small sites which could even be tombs. The varying proportions of these different types of sites may be investigated in order to examine the development of the settlement system.

Table 3.3.21 7th Century certain sites in transects

	Certainly occupied sites
City	0
Minor Centre	2
Village	6
House	19
House/Tomb	23
Total	50

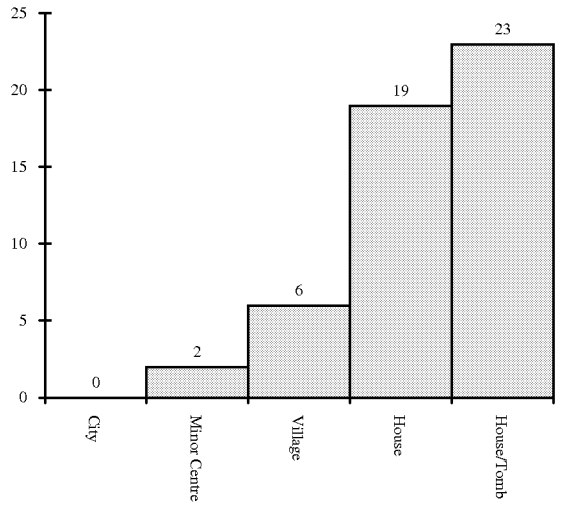


Fig. 3.3.14 7th Century certain sites in transects

Table 3.3.22 6th Century certain sites in transects

	Certainly occupied sites
City	1
Minor Centre	2
Village	7
House	35
House/Tomb	36
Total	81

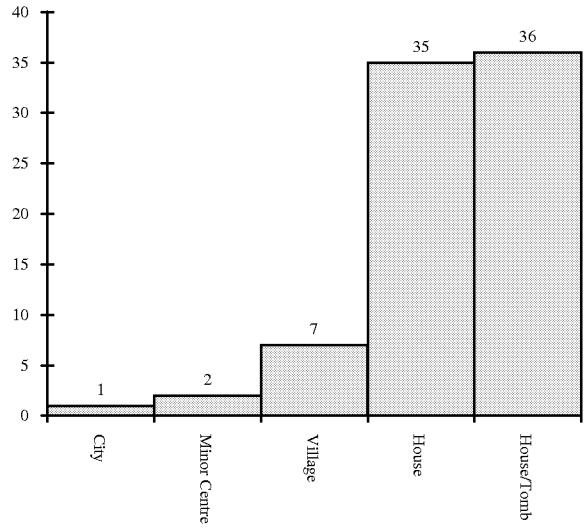


Fig. 3.3.15 6th Century certain sites in transects

Table 3.3.23 5th Century certain sites in transects

	Certainly occupied sites
City	1
Minor Centre	3
Village	8
House	36
House/Tomb	40
Total	88

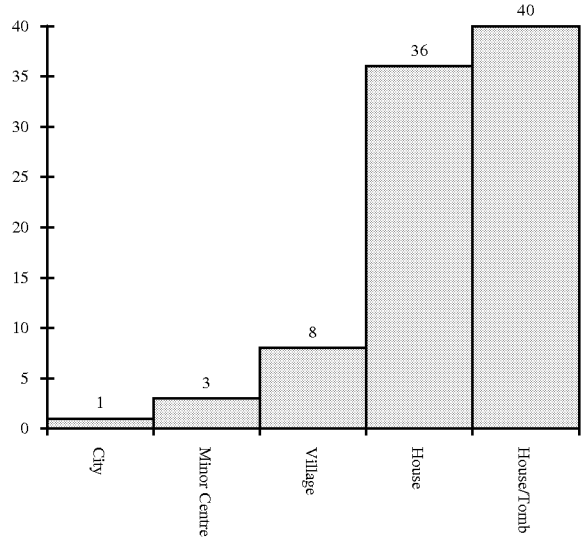


Fig. 3.3.16 5th Century certain sites in transects

Table 3.3.24 4th Century certain sites in transects

	Certainly occupied sites
City	1
Minor Centre	3
Village	7
House	22
House/Tomb	25
Total	58

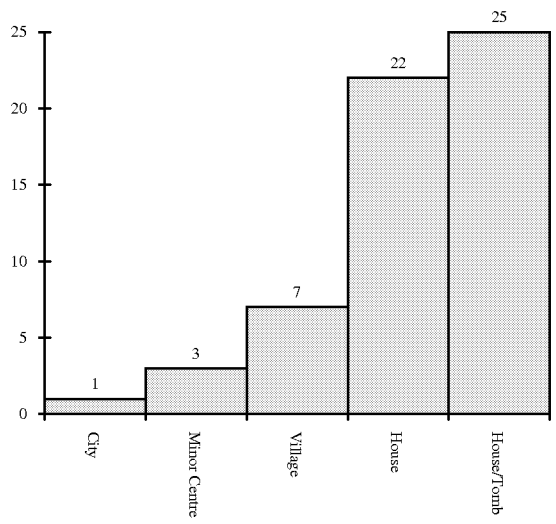


Fig. 3.3.17 4th Century certain sites in transects

Table 3.3.25 3rd Century certain sites in transects

	Certainly occupied sites
City	2
Minor Centre	2
Village	3
Villa	3
House 2	4
House	6
House/Tomb	16
Total	36

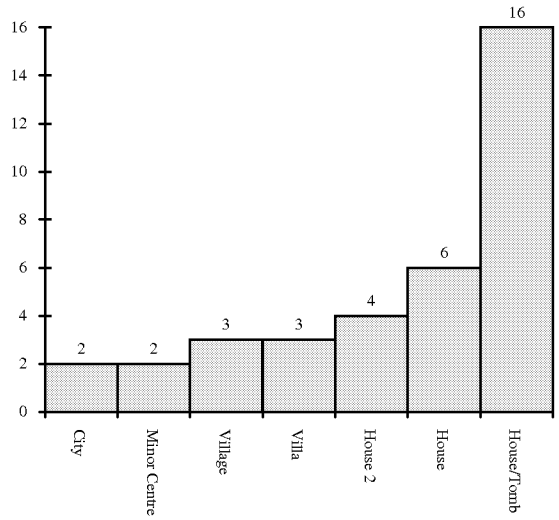


Fig. 3.3.18 3rd Century certain sites in transects

Table 3.3.26 2nd Century certain sites in transects

	Certainly occupied sites
City	2
Minor Centre	2
Village	4
Villa	27
House 2	34
House	54
House/Tomb	35
Total	158

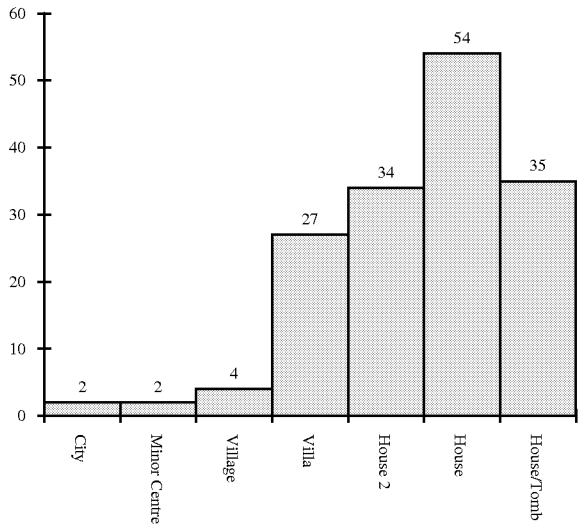


Fig. 3.3.19 2nd Century certain sites in transects

Discussion

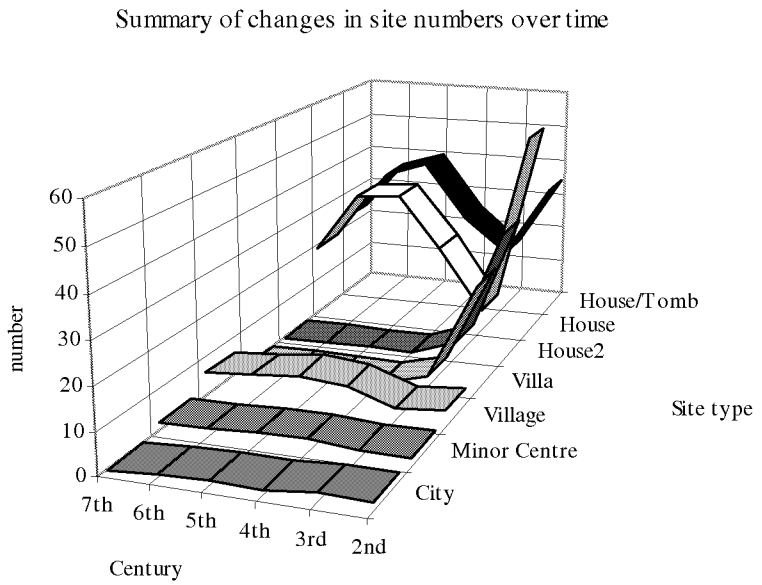


Fig. 3.3.20 Changes in numbers of site types over time

The proportions of the different classes of sites vary through time as the overall numbers of sites rises then falls to a low in the third century then rises again. It is the smallest sites, the houses and the house/tomb sites that vary the most in numbers. The larger sites, the city, minor centres and villages are much more stable, once they are established. It is the number of new small sites that increase the total number of sites between the seventh and the fifth centuries and the reduction in their numbers which reduces the total in the third century. Between the seventh and the sixth centuries the settlement pattern becomes more centralised and hierarchical as the city and minor centres become established, but at the lower end of the hierarchy, the small sites also increase in number. This indicates that the hierarchy develops in tandem with the increase in settlement density. Once the maximum of settlement has been reached in the fifth century there is some retrenchment as the number of smaller sites falls off. In the third century the small rural settlements reach a minimum following the Roman conquest.

By the second century, when the area has been resettled a new and different settlement structure has emerged. The proportion of small sites falls in relation to the larger sites and two new intermediate classes of site appear, the house 2 and the villa (although it is not certain that all of these sites have achieved the status of villa by this early date.) Along with this increase the number of the villages decreases. Nevertheless the total number of sites has increased and there are more Roman houses than there were Etruscan houses at the peak of their density.

Spacing

A further aspect of hierarchy is the spacing of settlements of similar types and the distances between sites in different levels of the hierarchy. The distances between settlements have been found empirically to have some regularity in various parts of the world at different levels of economic development. Distances from settlements in rural societies to the nearest market centre have been found to have a maximum of 3-7km which leads to a spacing of 6-14km between market centres with an average distance at *c.*10 km. This distance is thought to derive from the maximum distance over which it is economic to transport produce to market (Hodder and Orton 1976, 57-60; Haggett et al. 1977, 126-32). Distances from the cities, Doganella, Vulci and Roselle have been measured throughout the survey area. Within the Albegna valley the Doganella, Ghiaccioforte and Saturnia are regularly spaced with 10-12km between each of them. Orbetello too, lies a further 12km from Doganella and Talamonaccio lies 13km from Orbetello as the crow flies. The relationship between Talamonaccio and Doganella at only 8km apart does not fit this pattern, but it has been suggested that Talamonaccio had a special relation ship with

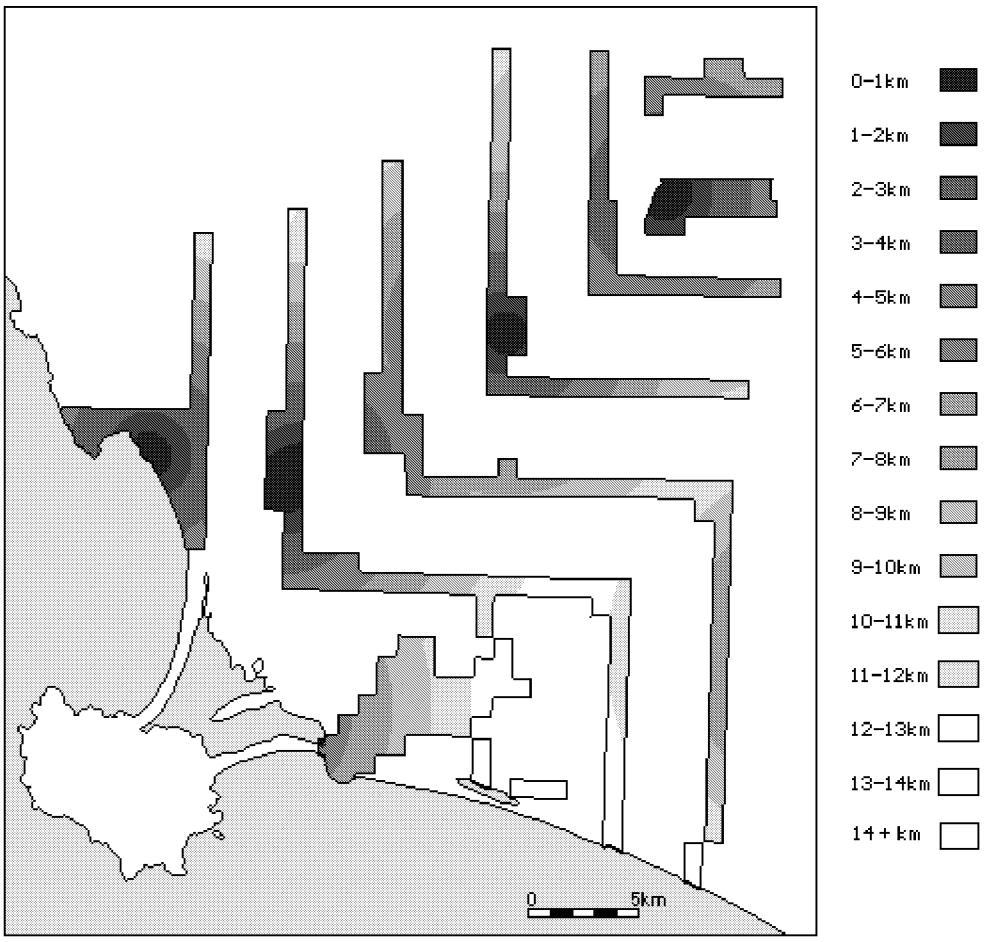


Fig.3.3.21 Distances from cities and minor centres within the sample transects

Doganella, by acting as its port. Thus within the valley there is an ordered and regularly distributed pattern of Etruscan centres. No areas are more than 10 km from a centre, except towards the northern watershed. A similar distribution of centres has been suggested in the Fiora valley where sites are between 10 and 20 km apart, (Rendeli 1993, 173), although if all the minor centres are included the pattern is not so regular as in the Albegna valley. Rendeli suggests this represents a days walk, however this distance is rather small for a one day walk and the farm to market distance mentioned above seems to be more appropriate.

Between the Albegna valley and the coastal plain the pattern of minor centres breaks down in those areas which are equidistant from the centres in the Albegna valley and Vulci. The map above shows that close to Lago di Burano there are some areas that are up to 15km from a centre. In the valley of the Radicata and the headwaters of the Elsa and the Chiarone areas are 10 to 14 km from centres. These are precisely the areas where the Etruscan villages have been found (with the exception of the site on Poggio Semproniano in the high valley). The largest concentration of villages is exactly in the part of the coastal strip which is furthest from a centre, around the mouth of the Chiarone. The remoteness from centres suggests that the villages were acting as market centres for the rural settlements. Furthermore, the location of small service centres in areas remote from other centres is what is predicted by the locational models of Christaller and has been observed in other archaeological contexts, e.g. Roman Britain (Hodder and Orton 1976, 54-66).

Variations through time may also be observed in the relationship between the locations of the centres and the landscape. In the developed Etruscan settlement pattern in the fifth century the land was distributed with respect to the centres as follows. The distribution of land peaks at 4 to 8 km from the centres and falls of regularly to 16km. In the second century the pattern produced by the Roman *coloniae* is different. The area of land rises regularly to 10 km and then falls steeply to 16km from the centres. The principal reason for the change is that the *coloniae* were further apart than the Etruscan centres. The areas furthest from the centres are still the upper Elsa valley, the coastal

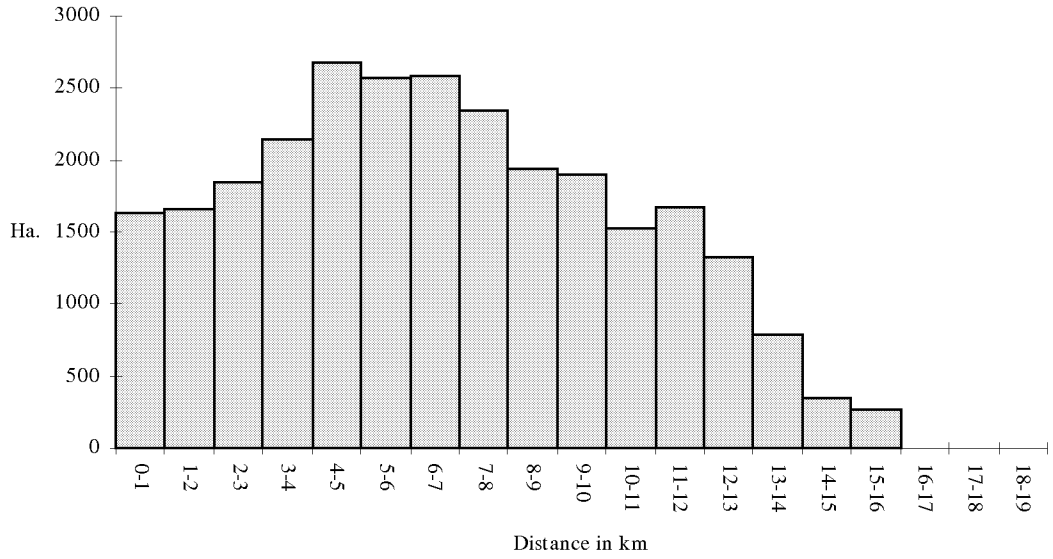


Fig.3.3.22 Distances from Etruscan cities and minor centres

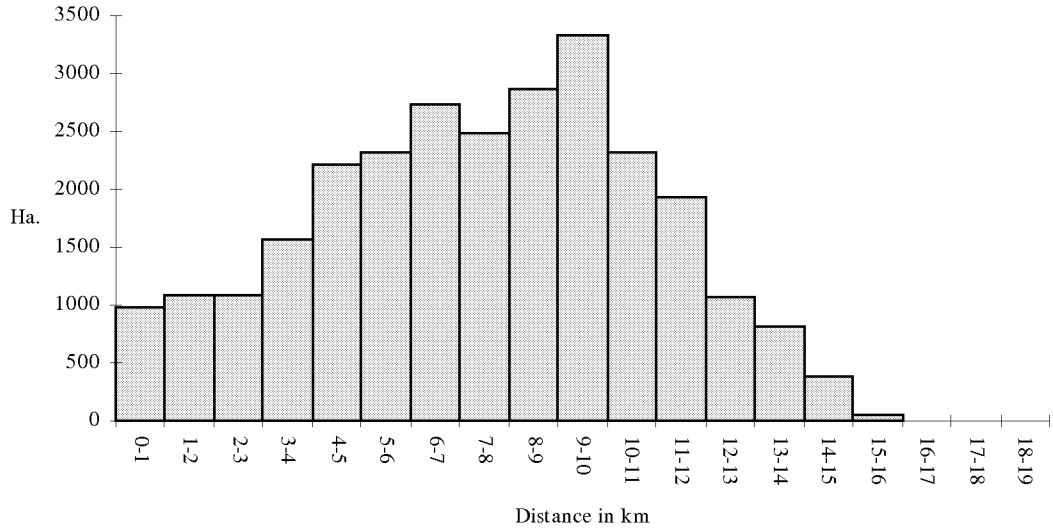


Fig. 3.3.23 Distances from Roman cities

strip between Cosa and Vulci and the northern watershed, but the area to the west of Talamonaccio is now also remote. As in the Etruscan period these remote areas are occupied by villages in the Elsa around Poggio Fuoco, and on the coastal strip by *statii*, at *Ad Nonas*(?) (PR1) and also beneath Talamonaccio the *Statio Telamon* (Carandini 1985, 49,123), these last two are also built on the *Via Aurelia*.

The distribution of the rural settlements may also be considered with reference to their distance from the centres. In the 5th century when the Etruscan pattern is fully developed the distribution of the sites is rather irregular and a χ^2 test shows that there is no significant correlation between the distances from the cities or the centres and the site locations. In the Roman period the sites can be seen to be more clustered towards the cities and a χ^2 test

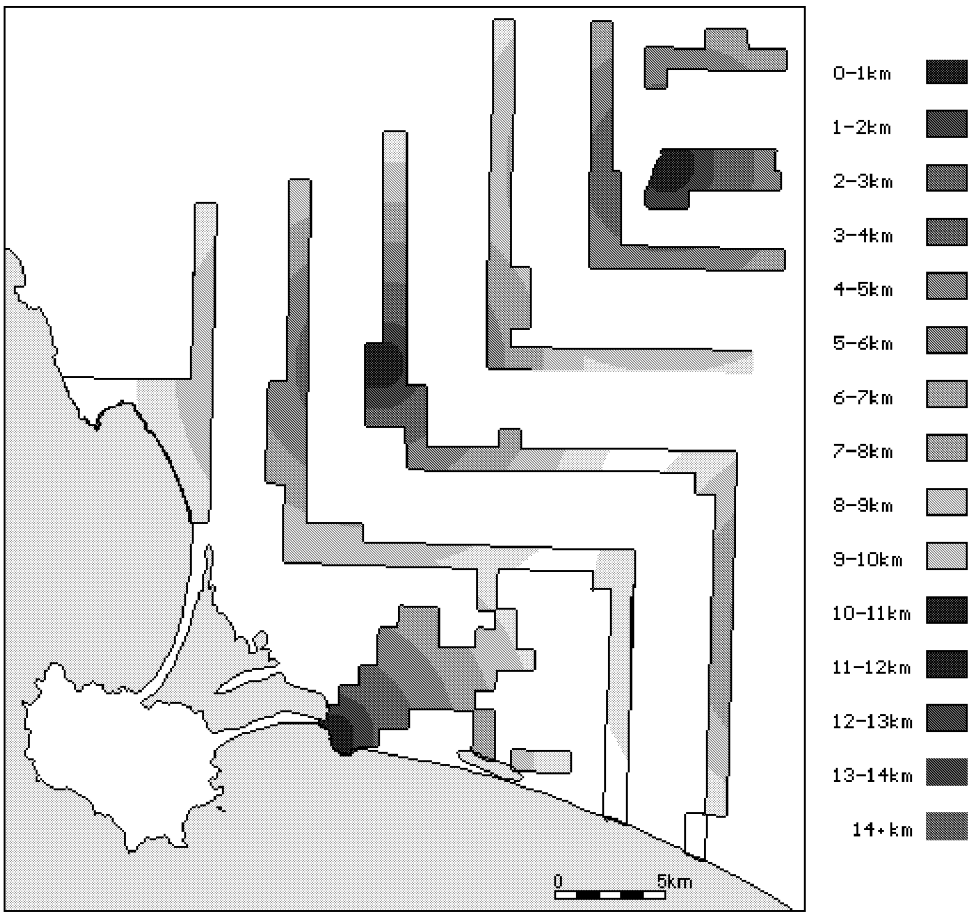


Fig.3.3.24 Distances from *coloniae* within the sample transects

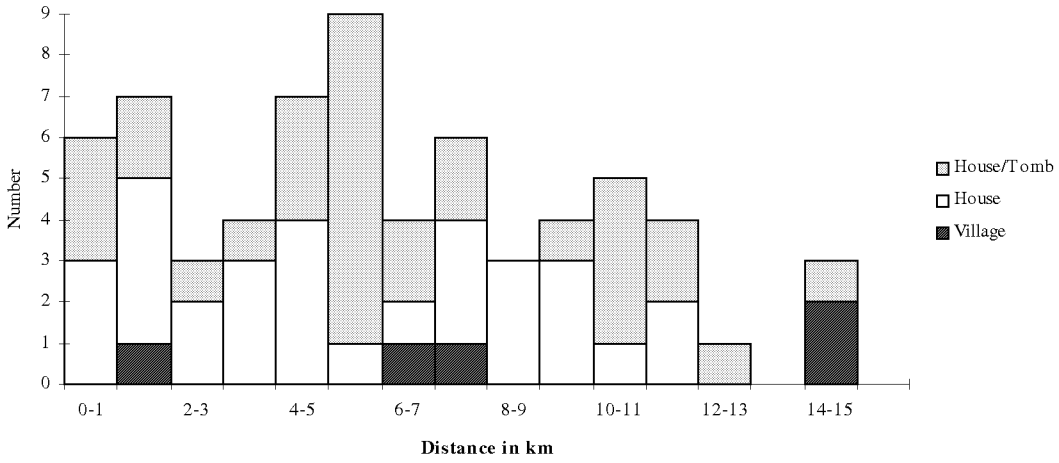


Fig.3.3.25 Distance of settlements from Etruscan centres (5th BC)

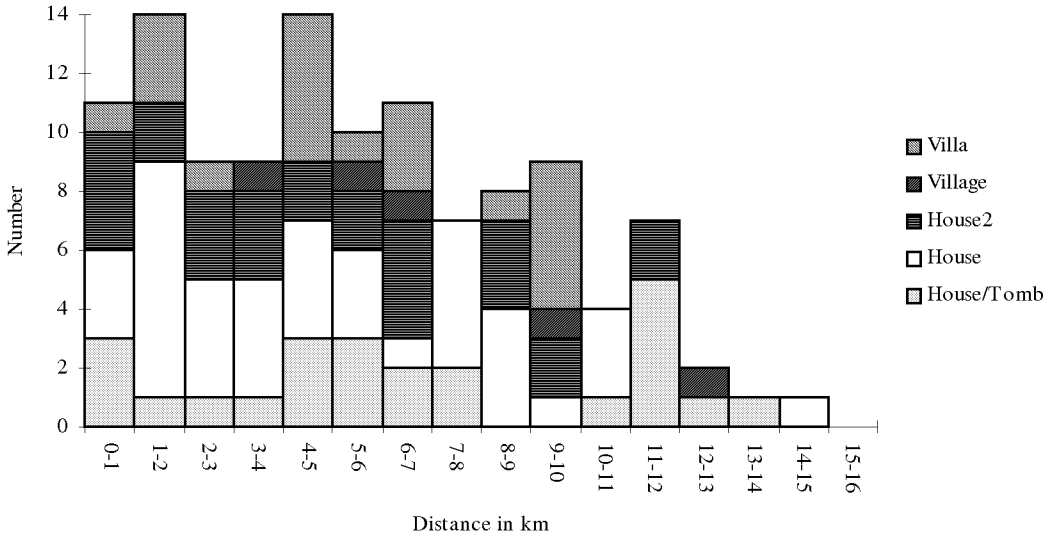


Fig.3.3.26 Distance of settlements from Roman centres (3rd BC)

confirms that there is a positive correlation between rural site locations and the band of land between 1 and 2 km from the *coloniae* (χ^2 = 6.989, significant at 0.01, Calculated in the same manner as in the landscape analysis above). This suggests that close proximity to a *colonia* was a significant factor in site location in the 2nd century BC whereas in the Etruscan period closeness to a centre was not so important. This observation implies that Roman rural settlements had closer physical links with the *coloniae*.

Settlement sizes

Sizes of large settlement within a settlement pattern have been empirically observed to follow a regular pattern which is known as the rank-size rule and may be stated as $p_i=p_1/i$ where p_i is the population of the i th town in the series 1,2,3,...n all towns are ordered in descending order of population and p_1 is the largest town (Haggett *et al.* 1977, 111). Thus the second largest site in the ranked sequence should have a size half that of the first and the third site should have a size one third of the first and so on. Deviations from this rule, which has a log-normal distribution, have been interpreted in terms of the integration of the economy by observation of the relationship between modern settlement patterns and economic development. Thus a pattern close to the log-normal is typical of a state system with a high level of integration between the sites. If the sites are smaller than expected this is typical of a colonial or imperial system and if they are larger than expected this in indicative of a non-state system with a low level of integration and little exchange between the levels in the hierarchy. This observation has found some application in archaeological studies (Hodder and Orton 1976, 69-73) including a study of Etruria and Latium in the tenth to eighth centuries (Guidi 1985). Problems with the application of the rule to archaeological situations are that the rule was formulated in terms of population which has been seen as directly rated to physical size of a settlement, this may not always be the case: secondly the physical size of the settlements is difficult to measure. In the absence of city walls, sizes of surface scatters may need to be pressed into service even though these are clearly determined by ploughing and other post-depositional factors. Despite these drawbacks the rule has been seen to operate in pre-industrial circumstances (Haggett *et al.* 1977, 114). Measurements of sites from the survey are compared here with measurements published for 55 sites in southern Etruria (Judson and Hemphill 1981).

The various curves plotted fall into four groups. 1. The log-normal shows what the rank size rule predicts. The curve for southern Etruria follows the log-normal curve quite closely. The first five sites, Veii, Cerveteri, Tarquinia, Vulci and Orvieto lie above the curve, then there is a sharp drop to the next site Falerii Veteres as noted by Judson and Hamphill (1981), however this discontinuity does not constitute a major deviation from the predicted curve. 2. The main

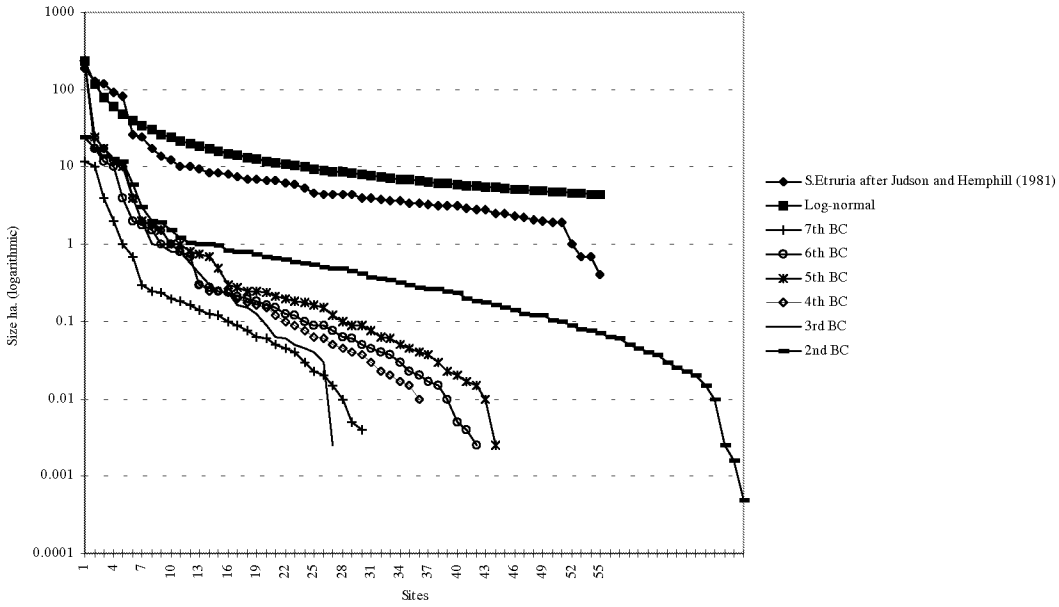


Fig.3.3.27 Rank-size plot of settlements in the Albegna Valley and Etruria

Etruscan group from the Albegna Valley in the 6th to 3rd centuries. The top part of this curve is similar to the curve for south Etruria with a large first site, Doganella, then a sharp drop to the minor centres, matched in southern Etruria by the group of sites led by Falerii. This comparison raises the point that the aggregated site sizes from southern Etruria caculated by Judson and Hamphill are a combination of all the different settlement patterns in southern Etruria and that the sites could be divided into hierarchies pertaining to each of the individual major cities. This notion will be pursued shortly. Sites smaller than 10ha are few and fall off rapidly, but once a size of 0.3ha has been reached the fall off becomes less rapid. However, at 0.01ha there is a rapid fall off to the point where no sites are recorded. This lower limit of settlement size is equivalent to a 10x10m scatter. 3. The curve for the seventh century is similar to the curves for the main Etruscan period with the differences that the city site and minor centres are lacking and there are fewer sites overall. 4. The Roman period sites from the second century follow a different curve. The Roman pattern also lacks a large centre. The Roman *coloniae* are all relatively small when compared to the Etruscan metropolises. Smaller centres are also few in the Roman pattern, however, there are a larger proportion of sites between 0.5 and 1ha than in the Etruscan period, this is due to the advent of the villas and the house 2 sites. As in the Etruscan period sites continue to fall off to the 0.01 limit where they disappear.

If the data from southern Etruria (Judson and Hemphill 1981) is combined with the data from the Albegna valley and Ager Cosanus the following curve is obtained.

The resultant pattern shows that the survey data integrates well with the data from southern Etruria and closely follows the log-normal curve. This indicates that the Etruscan settlement pattern follows that established for state systems, with some tendency, manifested in the larger sites towards an imperial or colonial model. The curve of the sites begins to diverge from this model at a site size of about 1.1ha, just over a site size of 100x100m (i.e. 1 ha). This is not surprising because the log-normal curve, and so the rank-size rule tends to a limit of 1 and the settlement hierarchy does not. Furthermore, the rank-size rule has only ever been claimed to hold true for the towns, or larger sites in the settlement pattern and the smaller sites, the so-called 'lower limb' of the graph have been identified as not necessarily conforming to the rule (Haggett *et al.* 1977, 113-5). However the integration of the two sets of data does go some way towards integrating traditional settlement evidence data with survey results, thereby linking more traditional topographical studies of larger sites with sites found by survey.

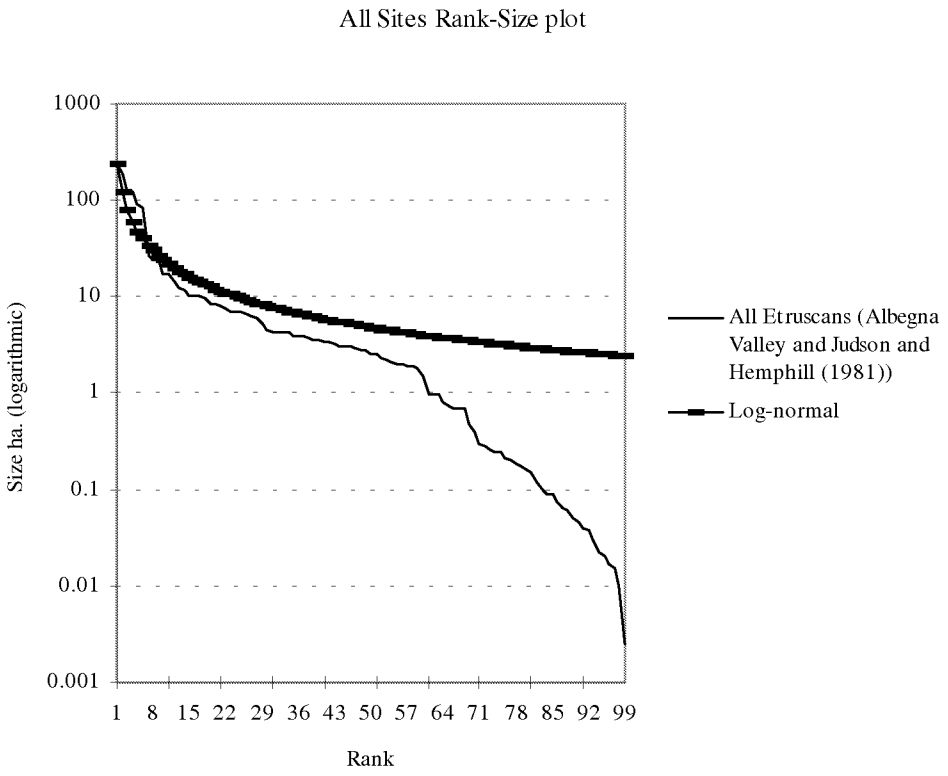


Fig.3.3.28 Rank-size plot of all Etruscan settlement

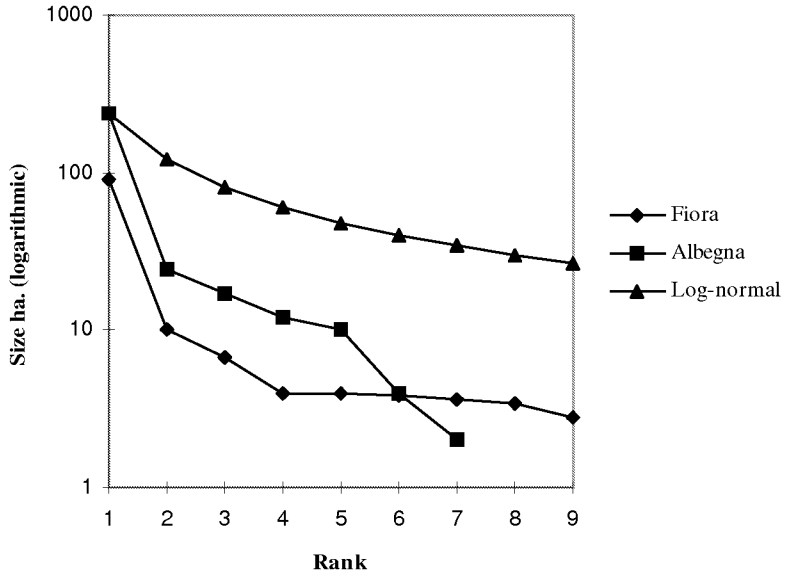


Fig. 3.3.29 Comparison of rank-size plot in the Albegna and the Fiora valleys for sites larger than 1 ha.

If the Etruscan pattern is geographically sorted we may compare the settlement patterns in different areas, here the settlement hierarchy in the Fiora valley is compared to the Albegna (Fig. 3.3.29) This comparison indicates that if only the larger sites are considered the two areas are similar in that both display smaller minor centres than the rank-size rule would predict, suggesting domination by the centre. It also suggests that there may be two separate settlement hierarchies, each with their own primate centres one centred at Doganella and another at Vulci. Similar patterns can be observed around other cities of Etruria and reflect the extent to which the settlement pattern was determined by the primate centres.

Chapter 4. Burials in the Ager Cosanus and Albegna Valley

4.1. Forms of burial

Isolated tomb sites

Criterion 1: A surface scatter smaller than 225m^2 containing pottery or tile.

Comments: The size of the scatter is limited to differentiate between a tomb and a house/tomb site. Tile is included in the definition since tile may be used in Etruscan tombs in the area (von Vacano 1985, 184). Sites are often characterised by a patch of sub soil visible on the surface.

Criterion 2: A tomb structure.

Comments: This may be of any of the varieties found in the survey area, generally simple rock-cut graves or pits, or rock-cut or constructed chamber tombs. These are found most often as a result of tomb robbing activity.

Criterion 3: Tomb specific finds or human bone.

Criterion 4: Reliable local information or bibliographic reference.

Discussion:

These 83 sites fall into two broad categories, tomb structures and surface scatters. The structures may be divided into the remains of rock-cut chamber tombs (MAG25, MAR305, 306, 310, 308, SD301) constructed chamber tombs under tumuli (CAP7, 55, MAR12, 60, 81, 108, SD251.2), semi-constructed chamber tomb (MAR113), tumuli (MAG50.2, MAR83) and a grave under a tumulus (SD180). The individual types of tomb represented all occur in necropolises and are discussed in detail below. Most of the surviving structures which were identified lay in either woodland, *macchia* or other uncultivated ground: a protection from agricultural activity. Tomb robbing is also a significant factor in the discovery of structures which would otherwise remain buried.

The remainder of the tombs are represented by surface scatters. Most of these are small, less than 25m^2, and over half are poorly dated. It is not at all clear what these scatters represent under the ground. They might be the ploughed out remains of tumuli, isolated parts of a necropolis, simple graves or some other form of burial not yet identified by excavation. One possibility is that they represent a simple form of burial practised in the later Etruscan period since tombs securely dating to this period are rare in the survey area.

House or tomb

Criterion 1: A thin surface scatter smaller than 225m^2 without other evidence to suggest it is a house or a tomb.

Comments: This category is used where there is uncertainty about the nature of the site, this is often caused by poor visibility in the field or few finds at the location.

Discussion:

The classification of 'House or tomb' is conceptually unfortunate since burial was not commonly practised at settlement locations during the Etruscan period, but it is preferable to a spurious classification as a tomb or as a house. The lack of definition arises since stone can be used in tomb structures, as at Marsiliana (Minto 1921), either in constructing a chamber or tumulus, or filling a grave, and tile is also used in the valley in tombs (von Vacano 1985, 184). Therefore, a surface scatter resulting from plough damage to a tomb may appear similar to a surface scatter deriving from a settlement.

In this context the publication of a small excavation in the lower valley at La Parrina is important (Ciampoltrini, 1991). Here a surface scatter of *c.*3 x 2m was excavated, beneath the plough soil was a cut in the natural sand, filled with a layer of carefully laid broken tile with some broken pottery and tile covering *c.*2.5 x 1.5m. Below this was a thin layer of sand containing sherds of pots apparently broken where they lay and some tiny fragments of bone. Below this was a further thin layer of sand containing pebbles, pottery and sherds of *pithos*. Ciampoltrini suggests that the find may be the remains of a simple grave, a *tomba a fossa*, containing two depositions, one above the other, and that the grave was filled with domestic debris largely consisting of tiles. Bucchero dates the find to the sixth century, perhaps the central part. All the finds from the 'depositions', a kantharos, two chalices and a jug of bucchero, and six coarseware jars appear to be decidedly domestic in nature. Finds from the fill consist of pan and canal tiles, a bucchero jug, a buccheroid impasto base, various jars and what appear to be rim sherds of two Doganella Amphorae (Ciampoltrini 1991, Fig7.8 = Perkins and Walker 1990, Fig.39.2; Ciampoltrini 1991, Fig7.9 = Perkins and Walker 1990, Fig.39.8). Unfortunately no positive identification of the bone as human is presented.

The situation is further complicated by the excavation of a second surface scatter 30m. to the south of the first, here a layer of tile, pot, bone and pebbles measuring 1.2 x 1m was found beneath the plough soil. This find is clearly interpreted as not of a tomb but the remains of some domestic structure. Finds included a sherd of a *piatto Genucilia*, black gloss, fine cream ware, jars, a basin and *pithoi*. Ciampoltrini dates this to the first half of the third century BC but is not sure whether it is a 'Roman' or an 'Etruscan' site. It would seem likely that the find pre-dates the Roman conquest as it contains fine cream ware probably made at Doganella and Roman rural settlement immediately following the deduction of the colony at Cosa is rare, particularly so far from the city.

It would seem that Ciampoltrini has excavated exactly what the survey would have defined as a house or tomb (the site is not precisely located but the survey did not find a house tomb in this area, a transect passes near to La Parrina and an Etruscan necropolis was located at ORB41). Therefore, this small excavation is vital to the interpretation of some of the survey sites. Unfortunately the excavation has not clarified the definition particularly – one scatter is interpreted as remains of a structure, the other as remains of a tomb. In both

cases it is clear that plough damage has severely compromised the remains and what ever was originally at the site is now beyond certain interpretation. If the interpretation of the first scatter ('Saggio Y') as a tomb is accepted then it is a rare case of a *tomba a fossa* from the sixth century, with a unique fill of tile and pot. This is a plausible interpretation as next to nothing is known of poor burials in this period and this may indeed be one. If the find is interpreted as the exiguous remains of a house then we must assume a large degree of plough damage or erosion to the site which has not resulted in a large surface scatter.

Necropolises

Criterion 1: A series of distinct surface scatters smaller than 225m^2 each containing pottery or tile over a distinct topographical unit, e.g. hill slope or hill top.

Criterion 2: Multiple tomb structures close to one another.

Comments: This may consist of any of the varieties of tomb found in the survey area, generally simple rock-cut graves or pits, or rock-cut or constructed chamber tombs.

Criterion 3: Multiple scatters of tomb specific finds or human bone close to one another.

Criterion 4: Reliable local information or bibliographic reference.

Discussion:

134 sites were classified as necropolises; these can be divided into various topographical groups, those around Magliano in Toscana, Saturnia and a cemetery at Marsiliana are discussed separately below, but there are other regional groups. Firstly there are the tombs around the city at Doganella and the other minor centres;, those at Orbetello and Talamone are best known from past excavations; at Ghiaccioforte the location of the cemetery is not certain but informants suggest that it lies to the north of the centre. Another concentration of necropolises is found in the area to the east and the south of Marsiliana. Otherwise cemeteries are scattered through the survey area, often in close relationship to individual settlements.

The majority of the necropolis sites were surface scatters (97 sites), as in the case of the isolated tombs the precise nature of the buried remains at these sites is not clear. Some of the scatters seem to have similar characteristics to cemeteries of chamber tombs, for example CAP159 and 164 consist of 2 alignments each (NE-SW) of scatters or CAP 34 a single N-S alignment and chamber tombs in the survey area often occur in alignments, for example those excavated at Cancellone near Magliano (Rendini 1989). Other sets of scatters do not show alignments but occupy a topographical unit such as a slope or hill top. Most of the scatters probably represent ploughed out constructed chamber tombs or grave burials.

The earliest type of Etruscan burial[16] known from the valley is cremation and deposition in a jar, usually ovoid but sometimes biconical, in a stone lined cist or pit, following the late Villanovan tradition which occurs throughout Etruria (Bartoloni 1989, 143-54). In the survey area this form of burial is only known from the cemetery excavated at Marsiliana, and at the Sede di Carlo cemetery at Saturnia (Minto 1921, 30; Minto 1925, 630-3). No earlier Villanovan style burials have been found although a Villanovan bowl found near Talamonaccio suggests that there may be a cemetery there (Mazzolai 1984, 89). The survey did not identify any cemeteries of this type.

The late Villanovan tradition burials appear to be partially contemporary with the earliest burials in graves (*tombe a fossa*), sharing the same material culture(Minto 1921, 297; Minto 1925, 630), and at Marsiliana two cremations were also found in the cuts of *tombe a fosse* (Minto 1921, 30). These tombs are also best known from the same two excavations at Marsiliana and Saturnia, but the survey did locate a *tomba a fossa* under a tumulus (MAR13) reported by Minto (1921, 26-7). The transition from burial by a cremation in a jar to inhumation in a grave is widespread throughout central and southern Etruria and in general may be used as a marker for the end of the Villanovan Period: around the end of the eighth century BC in this area.

Some of the graves at Marsiliana are surrounded by a circle of stones which probably represent the base of a tumulus over the grave. Circles of stones are only otherwise known in Etruria from Vetulonia (e.g. Giannoni *et al.* 1989, 121-38). However, as a form of burial it is found inland in Sabine and mid-Adriatic areas to mark social status (Cristofani 1977, 255), yet here too the circles may be all that is left of tumuli. At both Vetulonia and Marsiliana the circles are used at to mark out the richest depositions (Michelucci 1981). However, the practice of surrounding a grave with a circle or tumulus seems to have also been used from an early date for more modest burials, for example around *tombe a fossa* in phase IB (eighth century BC) at the cemetery of Cerveteri at Banditaccia Laghetto (Linington 1980, 119-29). By the end of the seventh century the shift to burial in constructed chamber tombs almost by definition required the place of burial to be under a tumulus. This change in burial practice, best visible in the valley at Marsiliana, repeated established changes further south, particularly well documented at Cerveteri (Bardelli, *et al* 1980, 119-261).

The surviving evidence indicates that the practice of burying under a tumulus was widespread throughout the survey area. In areas which are not currently cultivated, such as woodland, tumuli have survived associated with *tombe a fossa*, constructed chamber tombs and chamber tombs. In excavated cemeteries, with the exception of those around Magliano, circles of stone most likely representing the foundations of tumuli, have been found with all types of tomb (Michelucci

[16] There is no comprehensive treatment of Etruscan burial practice to date. A good outline is provided in (Pianu 1985, 309-35), but this concentrates on grander and richer burials in southern Etruria.

1982; Michelucci in press; Minto 1921; Minto 1925). Magliano may be an exception only because in all but one case (Rendini 1989)[17] the area between tombs has not been investigated, and circles around constructed chamber tombs are found just to the north, but off the lacustrine limestone at Poggio Bestiale (Mazzolai 1984, 153). This observation is interesting because in the cemeteries of Vulci, the neighbouring city to the south, tumuli are rare and only used in a most monumental form, unlike at Tarquinia or Cerveteri where they cover quite modest chamber tombs (Banti 1973, 89; Coarelli 1975, 219). To the north tumuli are common around Roselle over constructed chambers (Mazzolai 1984, 43), at Vetulonia over pits, graves as at Marsiliana, and constructed chambers (Banti 1973, 129-30; Curri 1978), at Populonia over constructed chambers (Banti 1973, 141-2), inland around Chiusi (Bianchi Bandinelli 1927b) and at Orvieto (Becatti 1934). In smaller centres to the south no tumuli been reported from any of the centres neither Sovana (Bianchi Bandinelli 1929), Poggio Buco (Matteucig 1972; Mazzolai 1984, 112-6), Castro (Maggiani 1981, 77-9), Pitigliano nor Sorano (Maggiani 1981, 82-7), even though grave markers (*cippi*), usually thought to be from the top of tumuli, have been found. Away from the centres, burials under tumuli have not often been published, on the 1:100,000 archaeological maps produced in the 1920's they are infrequent but do occur, on the sheet of Siena (Bianchi Bandinelli 1927c), Montepulciano and around Chiusi (Bianchi Bandinelli 1927b). Although their numbers are limited, as they are in the Albegna valley, it would seem that tumuli are under represented in the valley of the Fiora.

If the presence of tumuli separate burial practises the valley of the Fiora from those in the Albegna, a further feature unites the two areas. Funeral sculptures are common in Vulci (Sgubini Moretti 1981 with bibliography), and for example at Castro (Maggiani 1981, 55-9 with bibliography), and have been found further south at Tuscania (Sgubini Moretti 1986a), they have also been found in the lower Albegna Valley around Magliano (Dennis 1878, 265) and Doganella (Cristofani 1981, 106) although the current whereabouts of these pieces is uncertain. A similar association between the upper valleys of the Albegna and the Fiora is manifested in the funeral *cippi* (grave markers) found around Saturnia which are similar in form to those from Poggio Buco, Pitigliano and Sovana, and even made of volcanic *tufo* from the Fiora valley (Minto 1925,629, Figs,21-2).

The *tumulo di mezzo* (Fig. 4.2.15) at Macchiabuia near Marsiliana is important as it covers three *tombe a fossa* and one constructed chamber tomb under a single mound. Finds from the tumulus were scarce, it was robbed, but the earliest burial would seem to be a large *tomba a fossa* which lays at the centre of the tumulus, to either side of this are further *tombe a fossa* and on one side of one of these is a well preserved constructed chamber tomb (Minto 1921, 23-6). If it is assumed that the tumulus served a single descent line the presence of the two forms of burial under the same tumulus indicates that the change in burial rite does not necessarily indicate any social or dynastic dislocation or discontinuity. The same continuity is apparent in the cemetery of Marsiliana as a whole where pottery finds indicate that the constructed chambers followed the *tombe a fossa* although tumuli are not shared.

The constructed chamber tombs in the valley are of two varieties, those built on the surface and those with the chamber slightly cut in to the rock (*tomba costruttiva a camera seminfossata*). In both cases the structure is built of either slabs of the rock or more carefully shaped blocks, depending on the locally available materials. The differences between the types of tomb and the construction does not seem to have any social, cultural or chronological significance, but is rather determined by the suitability of the local rock for excavation. The best preserved tombs of this type are around Saturnia (Minto 1925; Michelucci 1982). Typically the chambers are quadrangular and nearly square, some have a central longitudinal partition or pillar often acting as a support for the vault of the tomb. The *dromos* is short and the orientation is variable but tends towards the east. The roof of the chambers is constructed of large slabs of rock around Saturnia and around Marsiliana the vaults are built of smaller cut rocks apparently forming a pseudo-cupola. Minto identified several large slabs with a hollowed side as *cippi*, but they may in fact have been cap stones for the vault of the chambers (Minto 1921, 22-3). The best preserved of these, the *tumulo di mezzo* at Macchiabuia seems to have had an ogival vault (Minto 1921, 23-6). The constructed chambers can be dated from the end of the seventh century through at least the sixth century, principally by finds of bucchero and etrusco-corinthian wares. Around Saturnia red-figured wares have also been found in the constructed chambers indicating use into the fifth century.

Subterranean chamber tombs cut into the rock are most common in the area of lacustrine limestone around Magliano in Toscana and are discussed in detail below. These tombs seem to parallel the constructed tombs and the most likely differentiating factor is the availability of suitable rock. This determines the location of the Magliano tombs (Kennet 1984, 32-3), and also makes the cutting of subterranean chambers tombs possible in areas around Saturnia where the travertine overlays softer stone (Minto 1925, 656, 685-92). This form of tomb was in use for a long period of time, from the late seventh (e.g. Minto 1925, 666-702) to the late fourth centuries (e.g. Donati and Michelucci 1981, 21-4). At a large scale, the distribution of subterranean chamber tombs is highly conditioned by the availability of suitable rock, such tombs dominate in the areas of volcanic tufo between the Tiber and the Fiora, but are rare in the expanses of Pliocene and Miocene limestones and clays of coastal Etruria between the Fiora and the Arno.

The shift to chamber tombs is not necessarily universal in this part of Etruria, for example *tombe a fossa* dating to the fifth or sixth centuries have been found in the cemetery of Sterpeti

[17] Here, at Cancellone, are several alignments of chamber tombs very close to one another, seemingly a planned development, and there is little room for tumuli.

near Saturnia (Minto 1925, 644-6), high on the slopes of Monte Amiata (Pistoi 1989, 51) near the headwaters of the Albegna and possibly at La Parrina in the lower valley (Ciampoltrini 1991).

To date there is very little evidence for a return to cremation and burial in a stone chest in the later Etruscan and early Roman periods as is found in the tombs of northern Etruria (Maggiani 1985,32), including the territories of Perugia (Maggiani 1985,35-7), Populonia (Romualdi 1985, 186), Volterra (e.g. Dennis 1878, 151-9), Chiusi, (e.g. Coarelli 1973, 58-60), the upper Ombrone valley (Mangani 1983), the valley of the Chiana (Maggiani 1985,32) and even the north slopes of Monte Amiata (Pistoi 1989, 42, Tav.9-10, 45-9, 57-9, 72). The only indications are reports from the last century of rough cinerary urns being found at Talamonaccio (Sensi 1987, 28-9). Equally there is no evidence for the inhumation in a large sarcophagus in either architectonic form or with a large reclining figure on the lid, as is common at Tarquinia (Banti 1973, 82-3), Tuscania (e.g. Moretti and Sgubini Moretti 1983) and also Vulci (Banti 1973, 96-7) to the south. The closest form of burial to these are those reported from Orbetello where stone 'coffins' containing inhumations were found (Dennis 1878, 242).

These observations place the Albegna valley at the boundary between a zone of cremation to the north-east and inhumation to the south. Although late burials from Roselle and Vetulonia, immediately to the north of the Albegna valley are not well documented: neither sarcophagi or cinerary urns have been found in the area. This raises the possibility that in this area and the Albegna valley a third burial tradition existed. It may be that burials continued in chamber tombs without sarcophagi, or that some other form of burial became commonplace. One possible candidate is simple cremation and the burying of the ashes in a plain jar laid in a simple pit. This form of burial is attested in the area of Monte Amiata (Pistoi, 1989, 42, 66-7, 71-2), where one such burial was also surrounded by a circle of stones, but has not yet been reported from the Albegna Valley proper, although such burials could conceivably be the origin of some of the surface scatters found by the survey.

Doganella

The survey work detected some 16 burial sites in the sampled areas within 1 km around the city at Doganella (SD120, 122, 123, 190, 215.2, 250.2, 250.4, 251.1-5,253), (Perkins and Walker 1990, 93). These sites included scatters of tile, stone and pottery, soil discolourations, a simple grave, and possibly remains of a constructed chamber tomb or tumulus. What may be further tumuli are visible in aerial photographs on the terraces to the north and east of the city, and dense macchia to the east of the city may hide more.

The best evidence for the cemeteries of Doganella dates to the 19th century. François (1851) recalls that to the east and north, outside of the city he found tumuli and empty shallow tombs which were small chambers with benches on the sides, he only found whole '*vasi neri di terracotta*' (black terracotta vases), presumably not bucchero as François uses the term elsewhere. It is not clear where François found these tombs, it might even be as far away as the necropolises around Magliano in Toscana which lie to the north and east of the city. To the west and south of the city François found many tombs under tumuli cut into the '*tufo*', he surmises that they are '*ipogei di famiglia*' (family tombs) from the large size of the tumuli. François excavated and found fragments of bronze and pots '*di buono stile arcaico*' ('in good archaic style' whatever that might mean precisely) and a coffin in *nenfro* containing bones but no lid. François was not impressed by his finds and did not pursue the excavations.

Dennis amplifies this description following his later visit to the site. He observed many tumuli to the north of the city and states that the were originally circled with masonry and some 25-30 feet in diameter (Dennis 1878, 266). No trace of these tumuli survives on the terrace north of Doganella but surface scatters were recorded and traces of tumuli are visible in old aerial photographs. Dennis' description suggests that the tumuli may have been similar to those preserved at Populonia (e.g. Coarelli 1975, 93-100). This style of tomb suggests further links to burial practice in northern Etruria.

Orbetello

The cemeteries at Orbetello are known principally from excavations in the last century. The necropolises lie in the peninsula of Orbetello between the settlement and dry land (ORB117, 118, 119, 120). Their sites have been swallowed up by post-war growth of the town. Most of the finds from the cemeteries appear to have been lost but recent archive and store room research by Ciampoltrini have enabled the reconstruction of some of the contexts (Ciampoltrini 1985b, 92-3). The earliest burials in graves (*tombe a fossa*) date from the late eighth century (Cristofani 1977, 246, 250) and apparently contained material similar to finds from Marsiliana. A wide variety of finds have been made. According to François (1849, 67) chamber tombs with one to three chambers were cut into the sandstone and the bodies laid on benches, there were traces of coffins of '*nenfro turchino*' (turquoise tufo - what is meant by this is not clear unless he means the stone was painted or stained with copper) and wood with nails, iron for men and copper nails with gilded heads for women (Dennis 1878, 242). François adds that few pots were found and that these were not of bucchero - this would seem to imply that the tombs being described are late Etruscan.

The owner of the land where many of the tombs were found published notes on some of the materials. These included a grave marker in the form of a temple, bronze helmet and greaves, bronze vessels and a tripod, a small tripod with horses feet with ivy leaves above and a dove, the square top also had doves in the corners, iron tripods and a gold tiara with laurel and oak leaves, a body with a gold tiara of myrtle leaves and an elaborate gold necklace, pottery vessels including red figure and two dice (Ciampoltrini 1985b). Later De Witt reported more finds of helmets and tripods, bronze vessels and some poorer burials with a few small rough vases, a bronze strigil and a mirror. These spectacular finds continued, Benndorf published 3 gold rings, an intaglio, a bronze candelabra, red figure and, curiously, a jar with ashes

and a skeleton of a dog (Benndorf 1867). Further finds included 16 rough figurines and a black patera with the graffiti 'mi lareces supelnas θafna' ' I am the cup of Larce Subulnius (Pittau 1990, No.341, 126). Dennis also visited Orbetello and adds that the corners of the coffins had ornaments of variegated glass, that women tended to have only one earring and that one tomb had a sistrum with a cow representing Isis (Dennis 1878, 242). Milani (1885,242-5) reports some finds of pottery. These includes holmos similar to one found at site ORB41, Italo-geometric wares, black figure, black gloss wares, Volusinian silvered ware and an askos with the graffiti 'rufies acil' 'I am the work of Rufius'.

The overall range of finds indicates a time span for the use of the cemeteries between the late eighth and the third century BC. Ciampoltrini (1985b, 93) suggests that there may be a lack of fifth century material from the cemeteries, but some of the red figure reported may fill that gap, and without thorough examination of all the material such a suggestion must be tentative. The most remarkable thing about the finds from Orbetello is that they provide evidence for a thriving settlement in the fourth and third centuries with a local population capable of burying valuable and well made goods with their dead which was open to commercial influences from around the Mediterranean. (Ciampoltrini 1985b, 94).

Talamonaccio

Talamonaccio too has yielded finds from Hellenistic cemeteries to the east of the hill. The tombs were excavated, or rather looted, in 1876, most of the ceramics and gold were lost or dispersed, but some of the bronzes have survived and are now in the archaeological Museum in Florence (Ciampoltrini 1985, 116), for example a spectacular thymiaterion (Cristofani 1981, Figs. 74-6). A few notes on finds have survived from excavations in the 19th century (Sensi 1987, 28-9). The overall impression is that the finds from the tombs were similar to those at Orbetello. Earlier tombs relating to the archaic settlement have not yet been located.

South and east of Marsiliana

In the wooded slopes facing the lower valley to the south of Marsiliana a large necropolis has recently been reported (Michelucci 1983; 1991). At Fontin Piccolo some 50 chamber tombs have been found in a small area of slope, a visit to the site in 1990 suggested that these were only the 'tip of the iceberg'. The area was investigated between 1982 and 1987 by Michelucci (Michelucci 1991, 346; in press), who also reports rock cut graves (*tombe a fossa*) and constructed chamber tombs under a small tumuli. Most of these tombs were quadrangular chambers with a short *dromos* cut into the rock. Some were surrounded by a circle of stones and had various arrangements of benches inside the chamber. *Tombe a fossa* enclosed in a circle of stones and constructed chamber tombs in this area were also published by Minto (1921, 22-7, 159-74, fig 2; Survey sites MAR12,13). The survey found further tombs on the eastern slopes of Poggio Tutto il Mondo some 3km to the west. The tombs were found in woodland suggesting the likelihood that yet more are still concealed. Most of the recorded tombs were constructed chamber tombs under a tumulus (MAR 81, 92 (2+ tombs), 93 (2 tombs), 94 (3 tombs), 96, 108), at others only a tumulus was recorded with no evidence for the type of burial (MAR82, 83, 96, 105), one tumulus possibly overlay a grave (a *tomba a fossa,* MAR93), three further tombs were represented by surface scatters only (MAR 105).

Michelucci has excavated in various tumuli in this area (Michelucci 1991, 346) these mostly covered constructed chamber tombs. Finds included attic black figure, coarsewares, an iron spear head, a silver earring, bucchero, etrusco-corinthian wares and a bronze fibula all of which date the chambers to the first half of the sixth century.

Generally all of these tombs seem to follow on chronologically from the excavated cemetery at Marsiliana (Minto 1921): the latest tombs there are constructed chamber tombs under a tumulus containing bucchero. Many of the tombs in the surrounding areas are of the same type, and so date from the late seventh through to at least the mid-sixth century, a date confirmed by the survey finds from the sites. Michelucci's work in the area has also produced evidence for a similar date range, etrusco-corinthian wares, thin bucchero and bucchero *kantharoi* similar to those found in the cemeteries of Magliano with notched carinations (Michelucci in press). The overall impression is that the hill slopes between the Elsa and the Radicata around Marsiliana formed a large cemetery area, not dissimilar to, and contemporary with, the cemeteries around Magliano. Just as at Magliano there is not evidence for a nucleated settlement in the area, it would seem that the occupants of the tombs came from the countryside around. A number of house or house/tomb sites and a scatter were found in this area evenly spaced on the lower slopes of the hills and the river terraces (MAR2, 6, 9, 14, 53, 80, 87, 88, 91, 233.) The more general significance of this area of cemeteries is further discussed below.

Grave goods

Table 4.1.1 Grave good from cremations at Marsiliana (after Minto 1921)

Tomb	Type	Ossuary	Clothing (3) ornaments	Hair(4) ornaments	Body(5) ornaments	Bronze Vessels	Weapons	Ceramics
4	Pozetto	Ovoid	4	2	-	-	N	N
43	Pozetto	Ovoid	-	-	-	-	N	Y
13a	Pozetto	Ovoid	-	1	-	-	N	N
13b	Pozetto	Ovoid	-	-	-	-	N	N
13c	Pozetto	Ovoid	-	-	-	-	N	N
13d	Pozetto	Ovoid	-	-	-	-	N	N
69	Pozetto	?	-	-	-	-	N	N
87(6)	Buca	Ovoid	1	Y	1	-	Y	Y (7)
36	Buca	Biconic (8)	1	1	2 (9)	2	Y	Y (10)
89	Buca	Biconic (11)	1 (12)	1	1 (13)	-	Y	Y (14)

(3) Bronze fibulae and buckles. (4) Bronze spirals. (5) Bronze arm bands, finger rings.
(6) 2 depositions. (7) 2 cups and 1 small jar. (8) Covered with a bowl.
(9) Lunate razors. (10) Cup and jug. (11) Bronze vessel. (12) Silver fibula.
(13) Razor. (14) 3 Holmoi, 1 jar, 4 cups.

The earliest assemblages of grave goods from the valley come from Marsiliana, here cremations in pits are the earliest burials in the cemetery. The above table (4.1.1) summarises the finds from undisturbed tombs (Minto 1921).

The typical biconical urn of Villanovan tradition is rare, most of the depositions are in ovoid jars. In the majority of burials there are no finds other than the ossuary itself and this lies in a small shaft (*a pozzetto*). However, a few contain a variety of goods, these are also distinguished by being burials '*a buca*' indicating burial in a larger pit, sometimes with a stone lining. The richest burial (89) contained ashes in a bronze biconical urn, and a silver fibula was buried with the remains of a man along with his razor, weapons and some ceramic banqueting equipment. The second richest (36) contained a similar range of material but no silver. This distribution of is typical of late Villanovan cemeteries (Bartoloni 1989, 144-52) and is generally taken to illustrate the emergence of a social hierarchy, which becomes more apparent in the Orientalizing period of the seventh century.

The change to inhumation in a grave is marked by an increase in the quantity of grave goods and a change in their distribution so that almost all graves have some form of goods. Finds range from ceramic feasting vessels to gold and silver jewellery to chariots; however the distribution of those goods among the graves is very skewed and only a few of them contain most of the grave goods. The finds from this period are detailed below with reference to Marsiliana but generally consist of personal ornaments, banqueting equipment, weapons and chariots.

Towards the end of the seventh century, by which time chamber tombs are the established form of burial, the goods deposited change and the distribution of precious artefacts changes. Grave goods are more evenly distributed between the depositions and extremes of wealth are not apparent in the grave goods. Finds from the tombs around Magliano, discussed below, serve to illustrate the style of burial in this period. No tombs have been discovered undisturbed from this period but most seem to contain a range of banqueting vessels in ceramic - bucchero, impasto, and etrusco-corinthian wares, few personal ornaments or weapons and no chariots. This general range of grave goods seems to continue through until the fifth century, where there is evidence from Saturnia for the additional deposition of personal effects such as mirrors and strigils which are not strictly ornaments.

In the fourth to third centuries there would seem to be an increase in the quantities of precious metals deposited in the tombs. However, tombs from this period have not been recently investigated and the best known are those from Orbetello and Talamone which seem to be particularly rich. The same chamber tombs seem to continue in use around Saturnia until at least the third century. Generally evidence for late Etruscan burial practice in this area is rare. It is possible that many of the undated surface scatters detected by the survey may represent burials from this period. Burials from the period immediately following the Roman conquest are only known from Orbetello and Talamone where the Etruscan tradition continues, elsewhere the burials dating to this period have not been identified.

4.2 Burial patterns

Chronological and spatial patterns

The burial sites recorded by the survey are listed and mapped in the following pages, century by century. The tables are divided into sites within and sites outside the transects; certainly utilised sites; possibly utilised sites and the number of sites also utilised in the previous period provides an indication of continuity of burial sites. As with the settlement sites the inclusion of the uncertainly dated sited sites in the possibly utilised sites category provides an indication of the maximum possible number of sites for each period.

Table 4.2.1 7th Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	23	-	103	126	6	-	61	67
Total burials	36	-	71	107	16	-	44	60
Sub total	59	0	174	233	22	0	105	127
Grand total	360							

Table 4.2.2 6th Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	36	23	67	103	27	6	1	28
Total burials	76	34	81	157	34	15	26	60
Sub total	112	57	148	260	61	21	27	88
Grand total	348							

Table 4.2.3 5th Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	40	26	63	103	28	23	39	67
Total burials	57	49	100	157	20	15	40	60
Sub total	97	75	163	260	48	38	79	127
Grand total	387							

Table 4.2.4 4th Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	25	25	78	103	18	18	49	67
Total burials	35	33	122	157	15	13	45	60
Sub total	60	58	200	260	33	31	94	127
Grand total	387							

Table 4.2.5 3rd Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	16	6	89	105	9	5	63	72
Total burials	13	11	145	158	1	1	18	19
Sub total	29	17	234	263	10	6	81	91
Grand total	354							

Table 4.2.6 2nd Century burials

Site type	In sample transects				Out of sample transects			
	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites	Number of certainly utilised sites	Number of sites also utilised in previous period	Number of possibly utilised sites	Maximum possible number of sites
Total settlement/burial	35	8	55	90	22	6	15	37
Total burials	17	4	19	36	12	0	6	18
Sub total	52	12	74	126	34	6	21	55
Grand total	181							

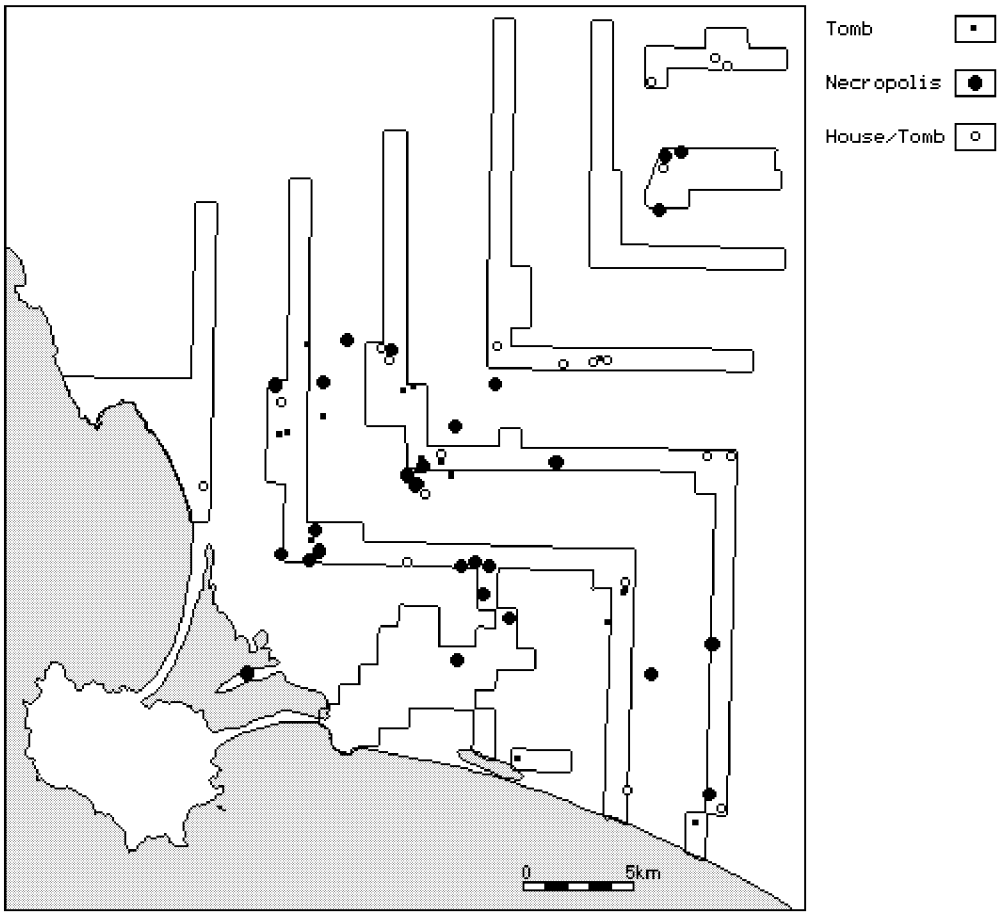


Fig.4.2.1 Minimum 7th Century burials

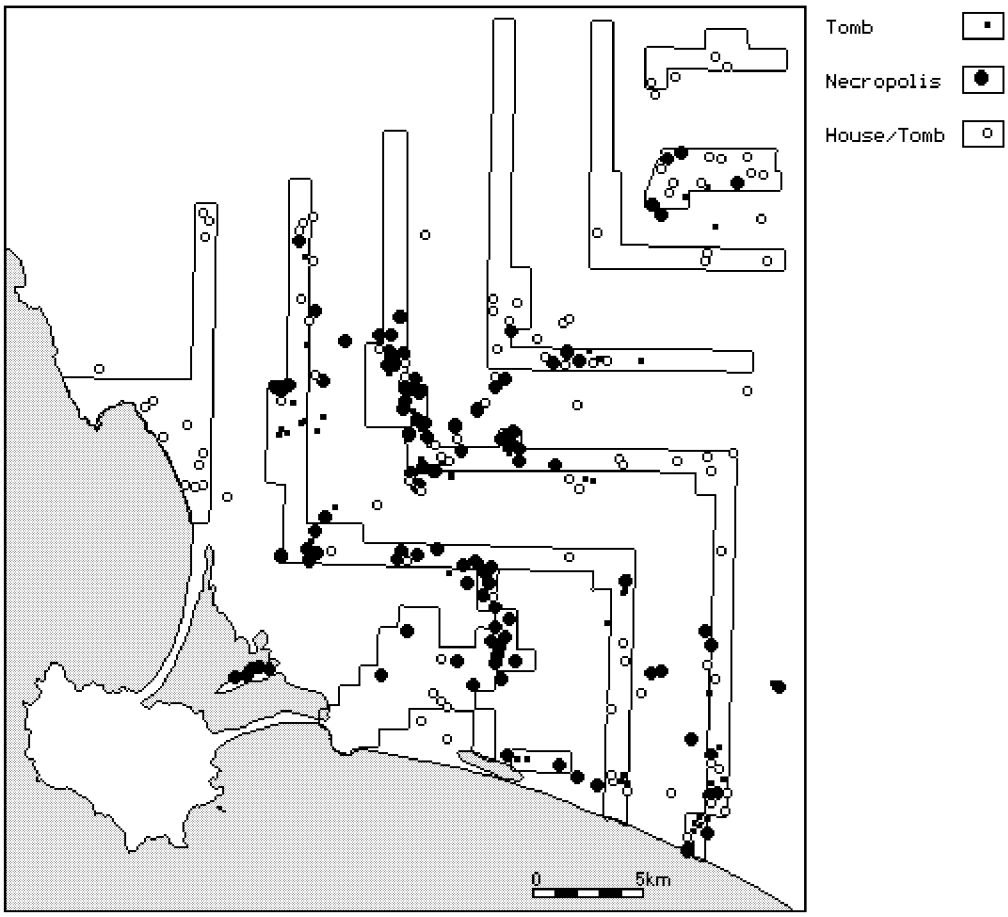


Fig.4.2.2 Maximum 7th Century burials

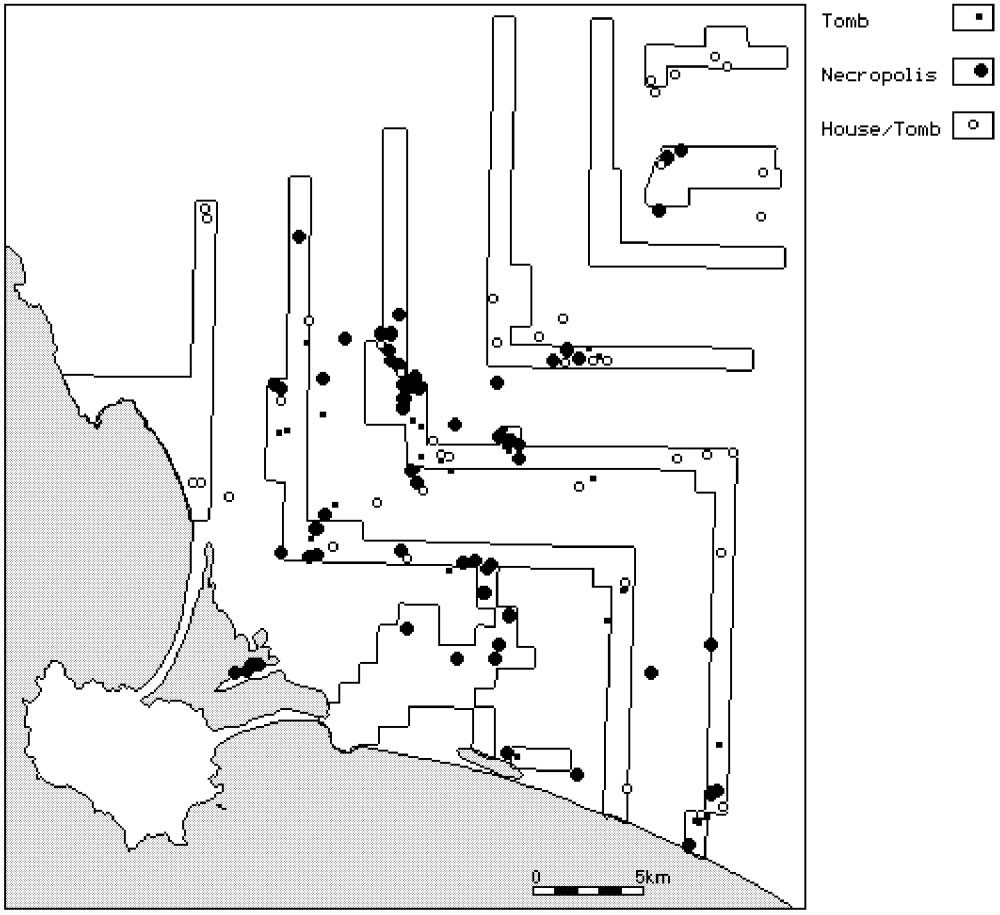


Fig.4.2.3 Minimum 6th Century burials

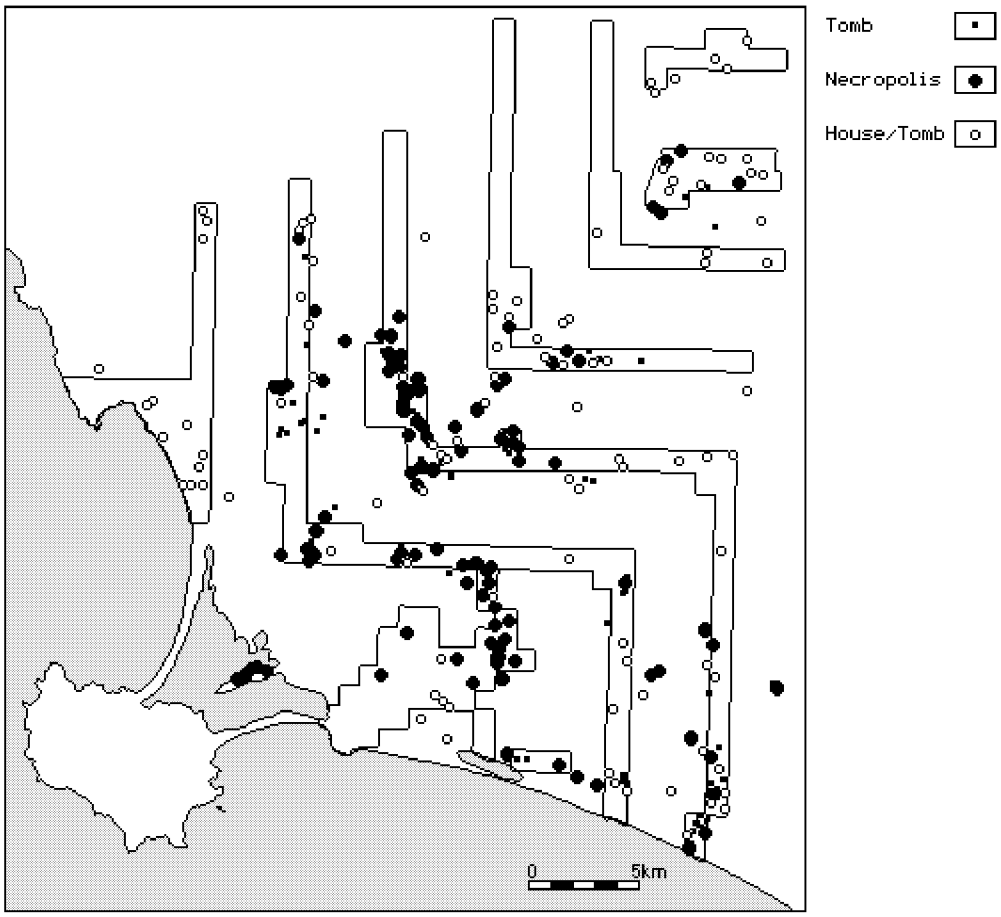


Fig.4.2.4 Maximum 6th Century burials

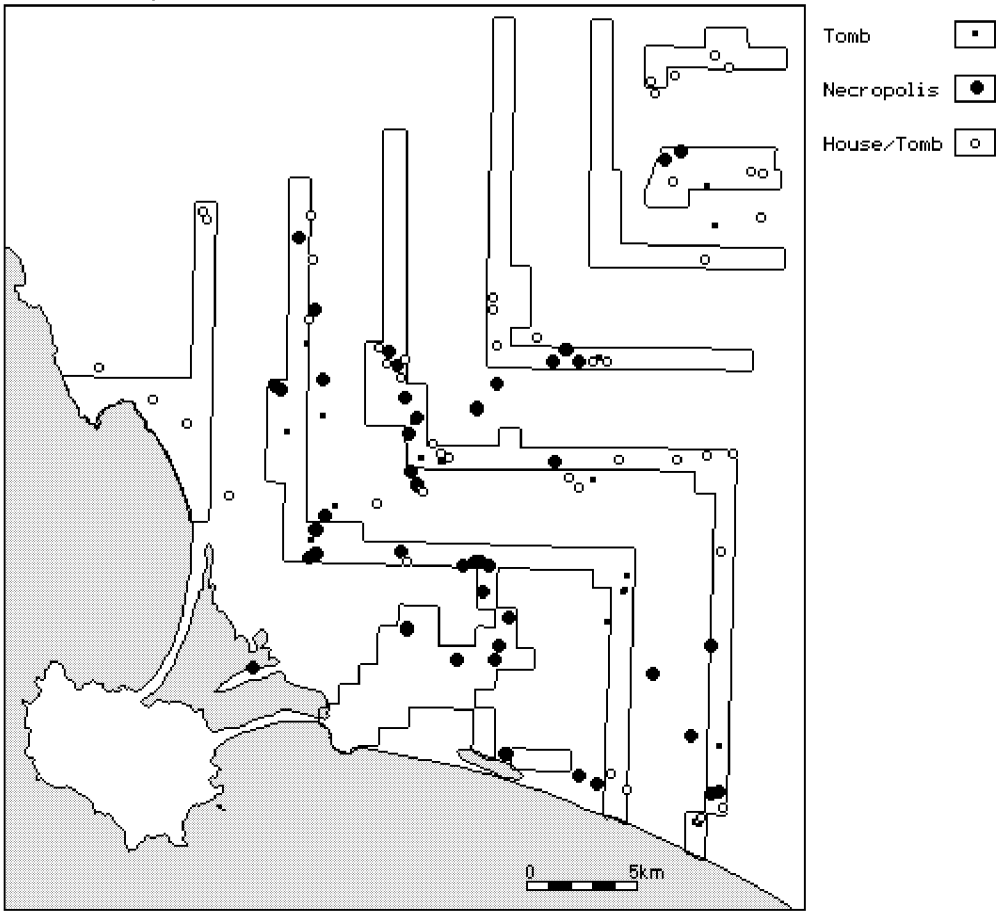


Fig.4.2.5 Minimum 5th Century burials

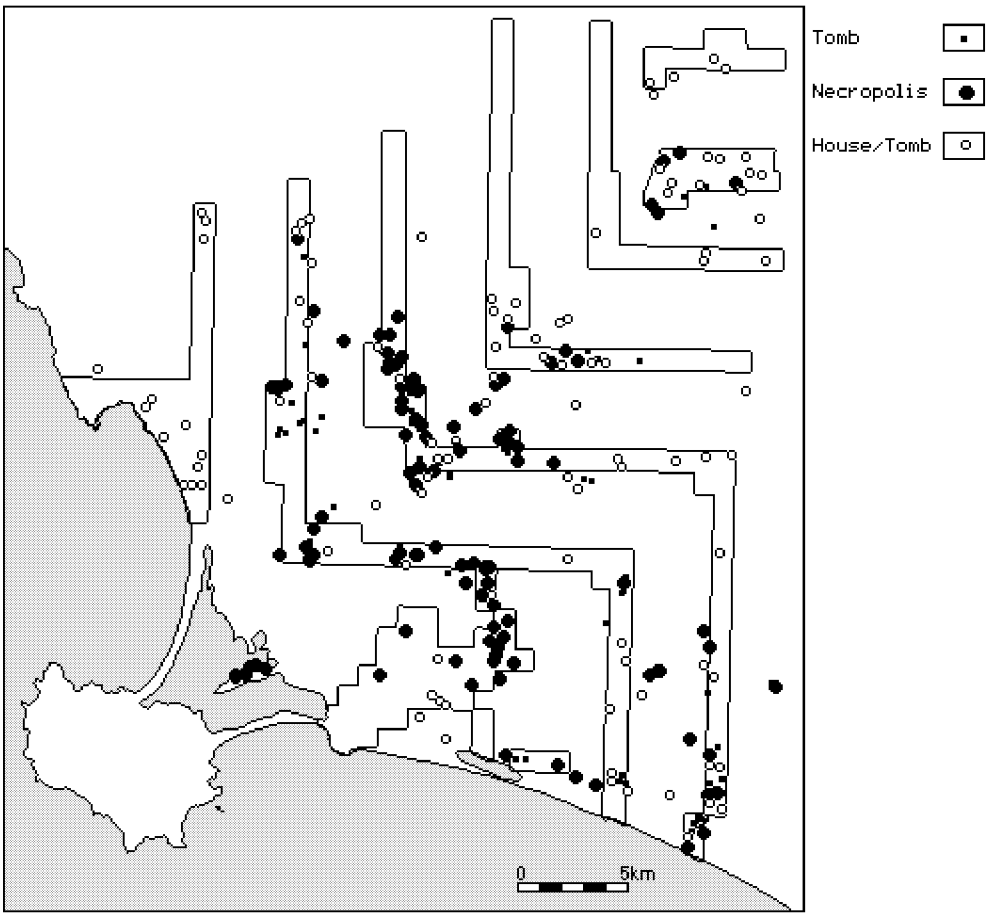


Fig.4.2.6 Maximum 5th Century burials

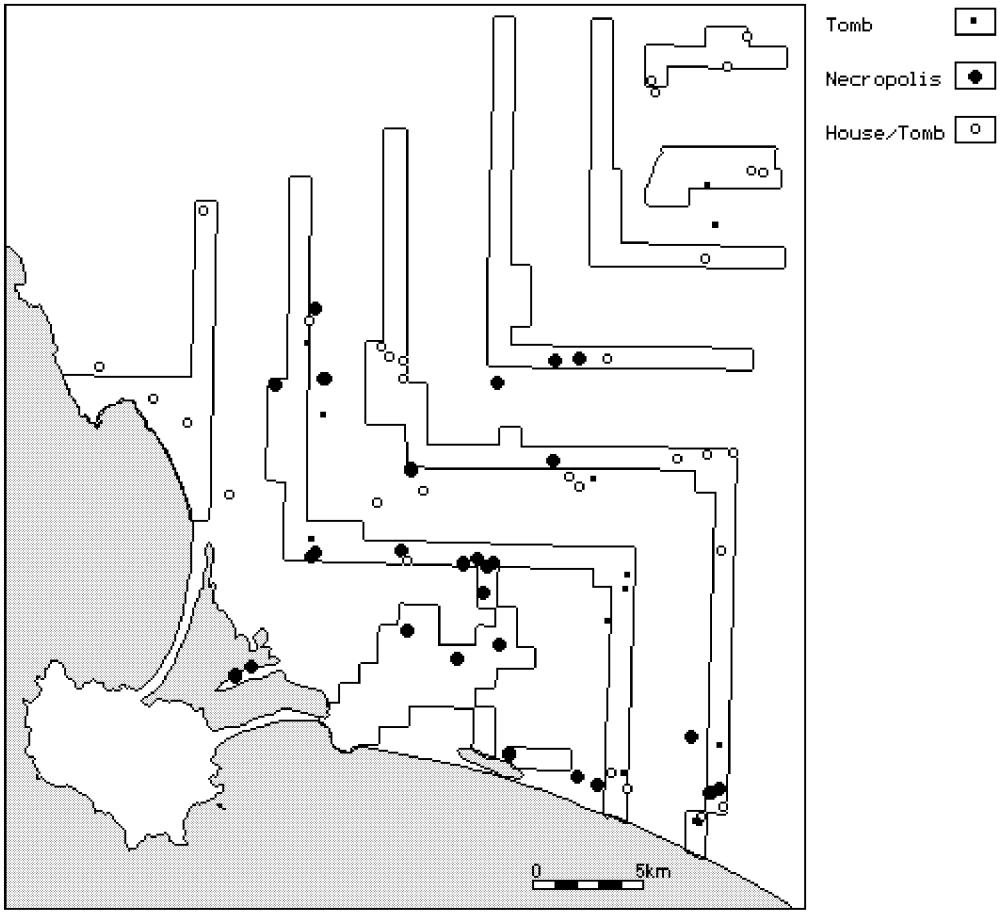


Fig.4.2.7 Minimum 4th Century burials

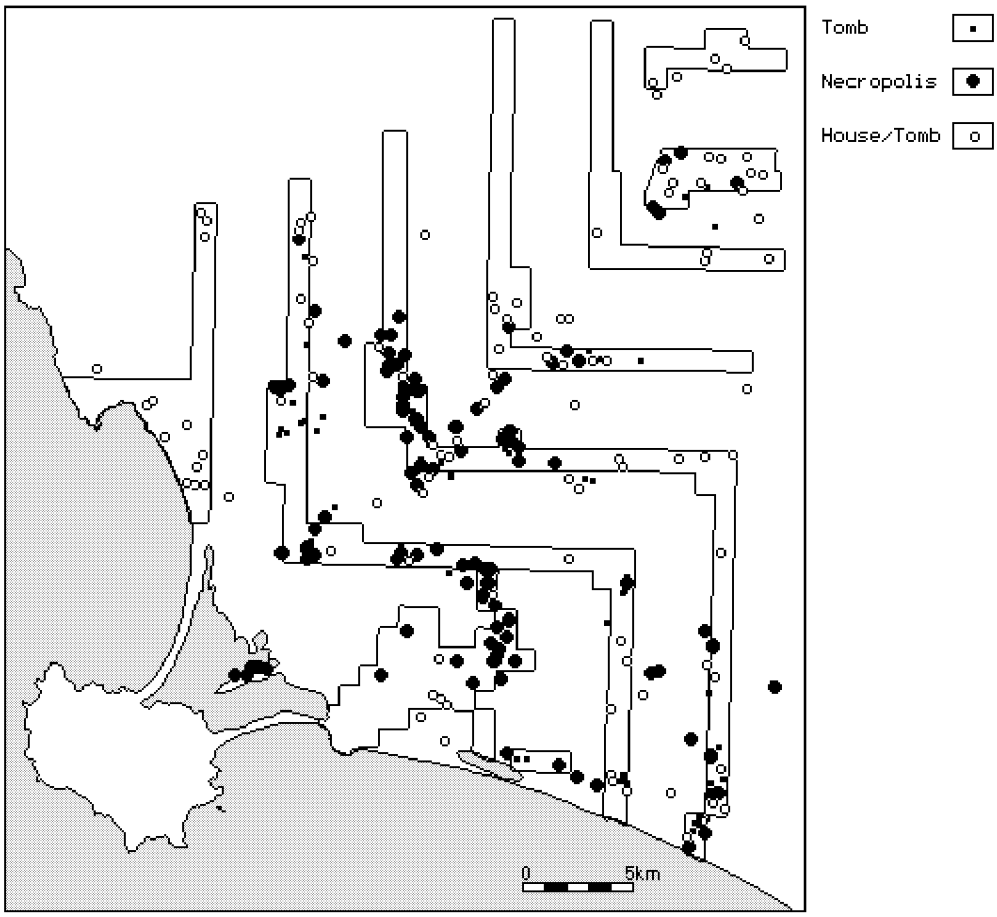


Fig.4.2.8 Maximum 4th Century burials

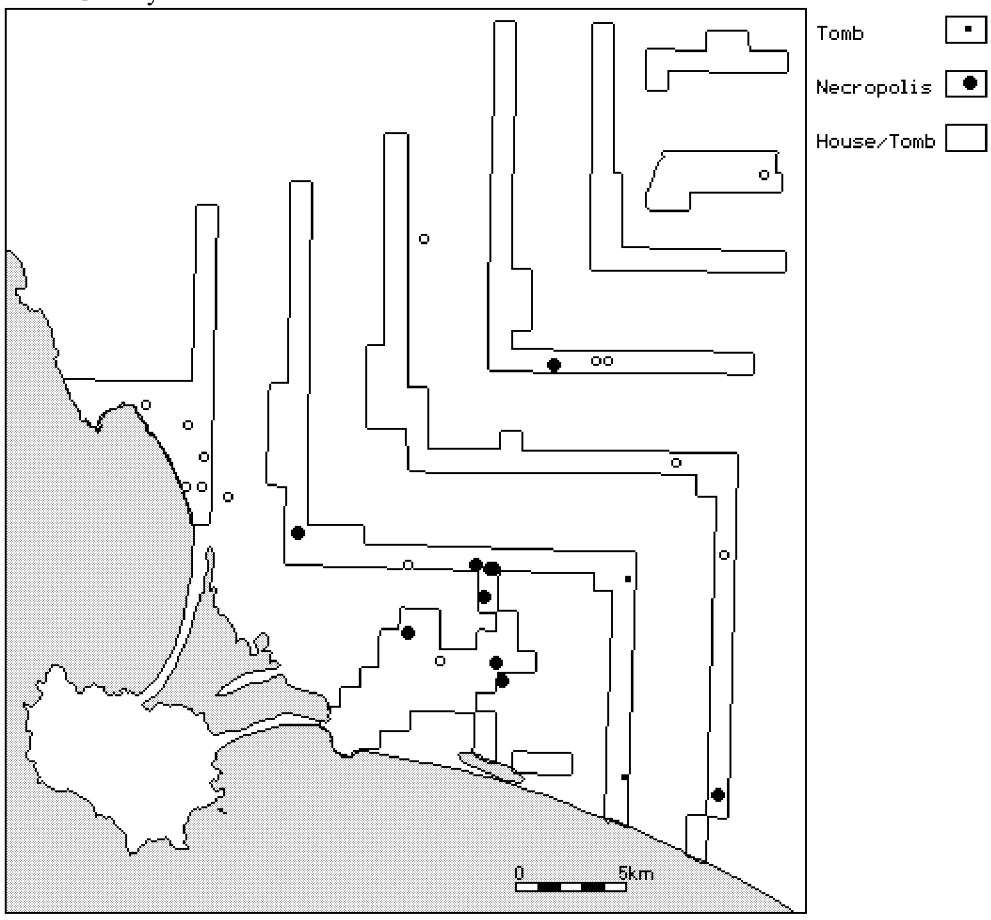


Fig.4.2.9 Minimum 3rd Century burials

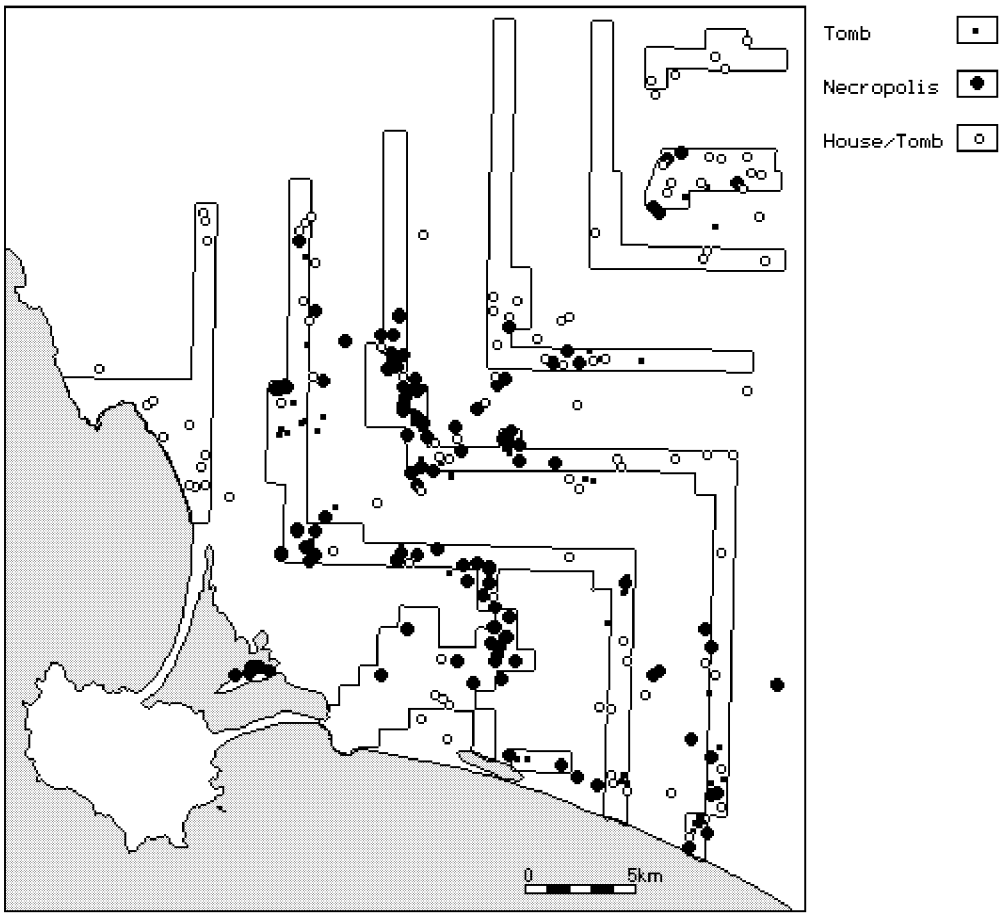


Fig.4.2.10 Maximum 3rd Century burials

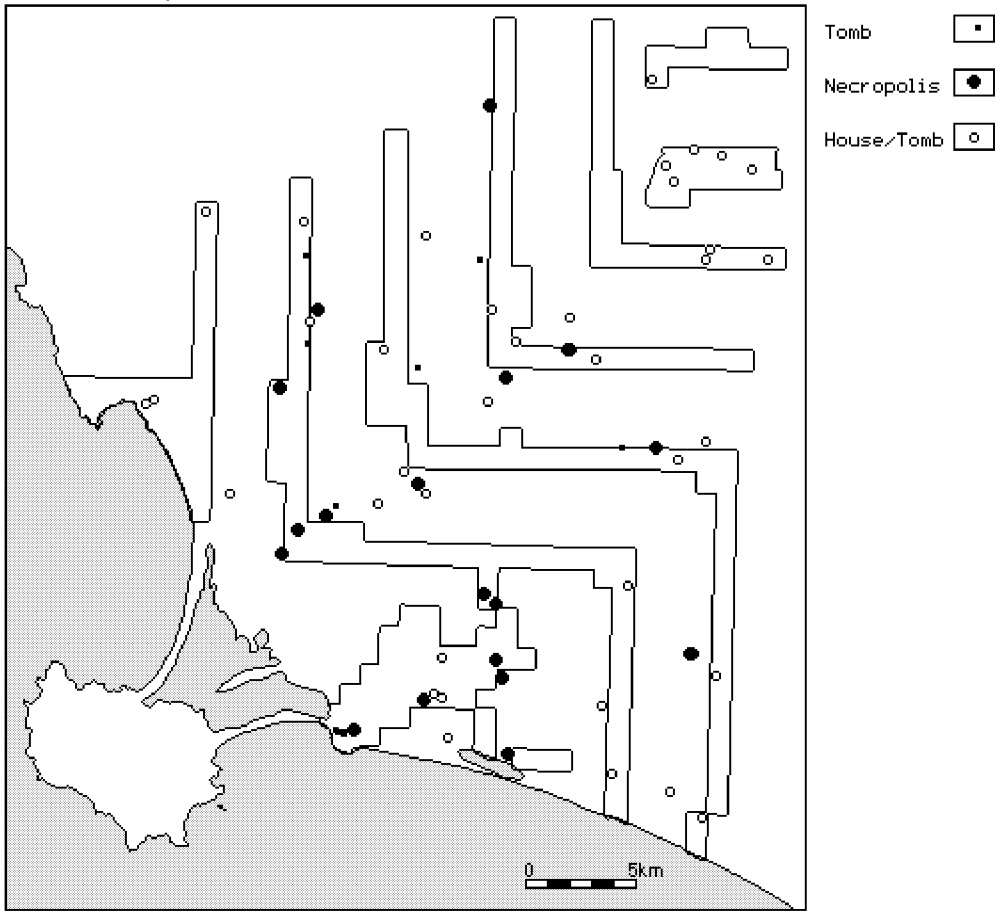


Fig.4.2.11 Minimum 2nd Century burials

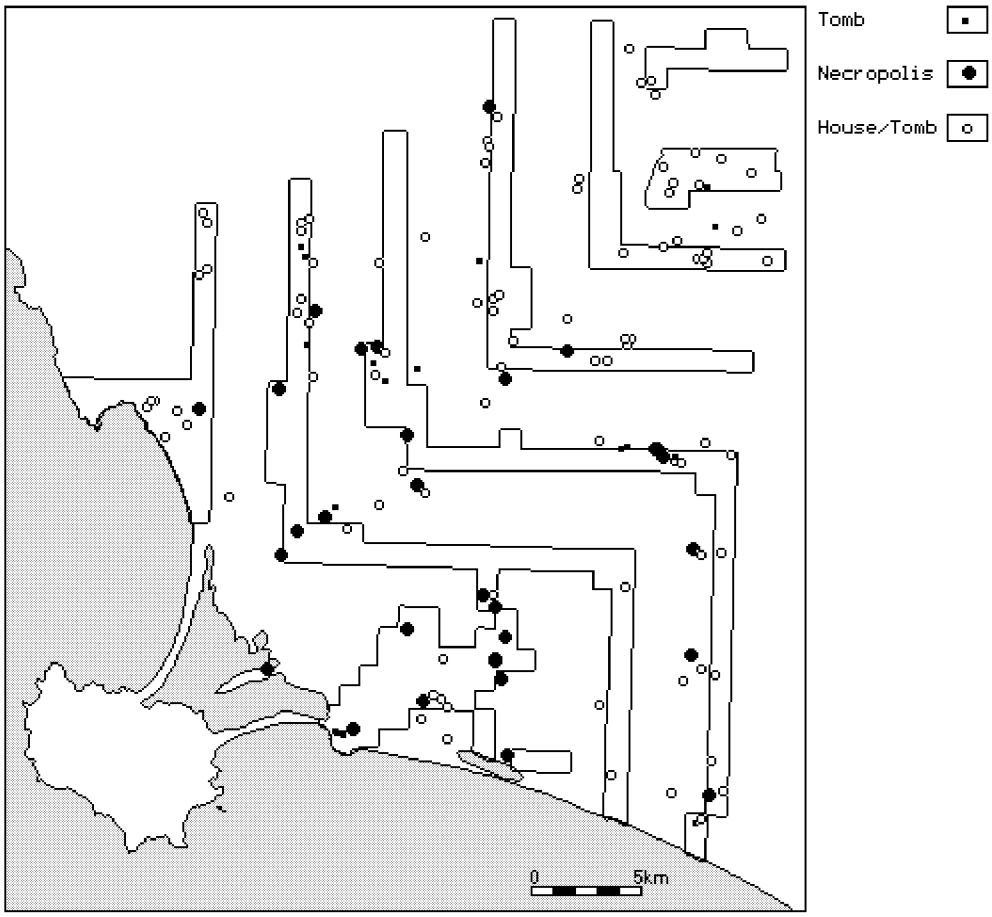


Fig.4.2.12 Maximum 2nd Century burials

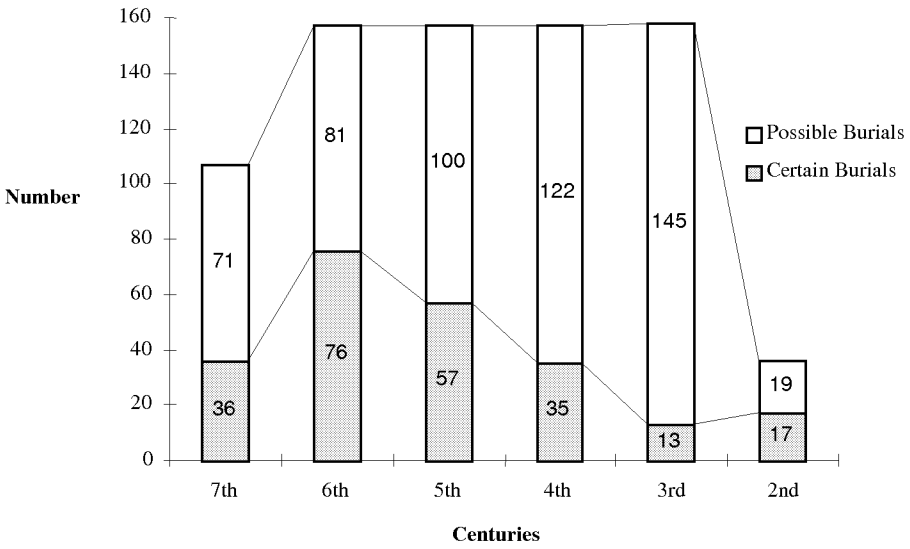


Fig.4.2.13 Graphical summary of burial site numbers within the samples

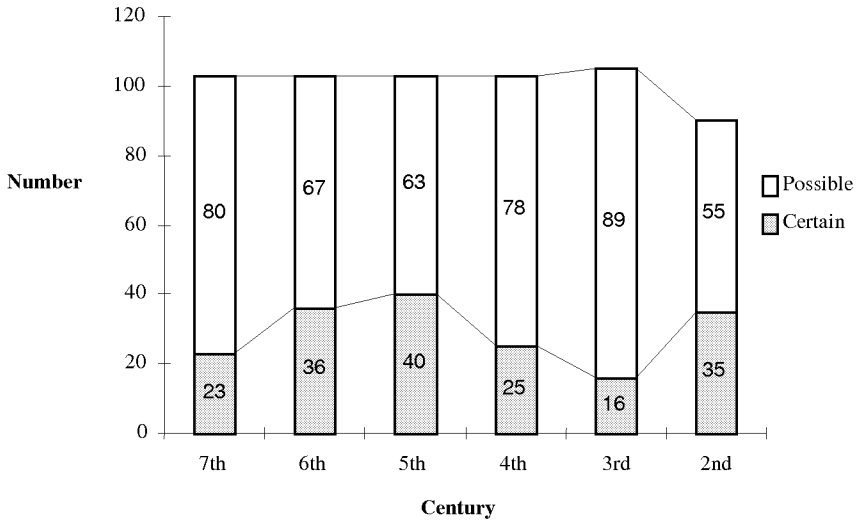


Fig.4.2.14 Graphical summary of burial/settlement site numbers within the samples

The number of burial sites follows the same general trend as the numbers of settlements. Their numbers double between the seventh and the sixth centuries. During this same period there is a generalised shift from burial in an individual grave to multiple depositions within a single chamber so the increase in the number of individual burials represented is even greater. The spatial distribution of the burials in the seventh century follows the general distribution of the settlements in this period, but some persistent differences between the distributions of the burials and the settlements are already apparent. Certainly utilised burial sites were not identified around Talamonaccio; only house/tomb sites, although the area was settled. A similar situation may be observed around Ghiaccioforte in the middle valley, Semproniano in the upper valley and around the headwaters of the Elsa and the Chiarone. In the Radicata valley a large number of necropolises were found even though settlements were not identified in this area. If the maximum reconstruction of the burial pattern is considered these trends are reinforced but overall clarity is lost as many undated sites from within the sixth century cemeteries become incorporated on the maps.

During the sixth century the increase in the number of tombs in the survey area is apparent, as is the development of the chamber tomb cemeteries in the lacustrine limestone around Magliano. The cemeteries around Marsiliana are less evident as the sample transects do not cover a large area of the hill slopes where the chambers were excavated. The trends identified in the previous century continue to be strong. In addition tombs become densely concentrated around the mouth of the Tafone, closest to Vulci. In the minimum reconstruction of the fifth century burials there are fewer tombs but the distribution of burials is similar. This trend continues into the fourth century when the cemeteries around Magliano and Marsiliana seem to have fallen out of use.

Exceedingly few burials have been identified for the third century and the only area where tombs are at all common is the valley of the Radicata. With the establishment of the Roman settlement pattern in the second century burials are thinly scattered through the occupied areas. There is no evidence for the clustering of necropolises seen in the Etruscan period.

Although it was possible in some cases to identify burial sites close to settlements the survey was not able to observe a systematic relationship between the two. Often a burial site would be found without a corresponding settlement or *vice versa*.

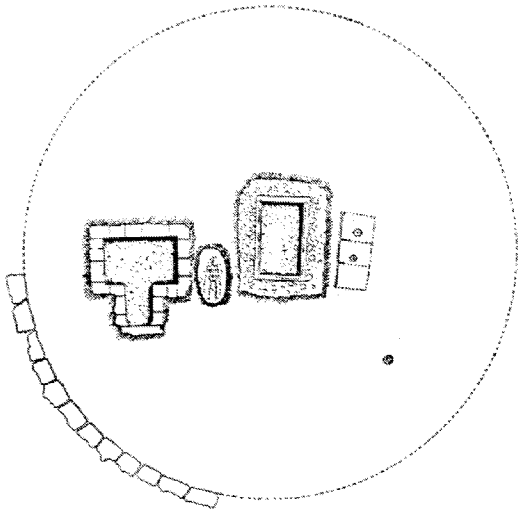


Fig. 4.2.15 Tumulo di mezzo (Minto 1921, Fig.2).

4.3 Case studies

Marsiliana

The burials

In the lower valley, close to the lowest fordable point of the river Albegna, lies the cemetery of Marsiliana d'Albegna (site MAR1.0). The site was discovered in 1908 and excavated in various campaigns between 1908 and 1919 by Prince Tommaso Corsini and the R. Soprintendenza dell'Etruria. The tombs were published in detail in 1921 by Antonio Minto (Minto 1921). Since then various of the grave goods have appeared in exhibition catalogues and been the subject of brief studies (Banti 1973, 112-7; Camporeale 1969, 66; Cristofani 1970, 286-; Cristofani 1971, 63-; Cristofani 1977, 240-43; Cristofani 1981, 97-100; Martelli 1972, 73-; Martelli 1981, 406; Michelucci 1985d). Recently an additional tomb has been found in the cemetery but it was disturbed by a drainage ditch and finds were few (Renzi 1991).

Although the tombs were explored at the beginning of the century the standard of excavation is relatively good by modern standards. All artefacts were kept in their contexts and were described and listed in detail by Minto. The graves themselves are also described with general comments on their stratigraphy. What is lacking from the report are detailed plans of individual tombs and illustrations of all the finds. Unfortunately the skeletal remains were not well preserved and only general comments are available about the numbers of skeletons in each tomb. The grave goods are currently in the Archaeological Museum in Florence but unfortunately were damaged by a flood in the 1960's and are still not available for study.

The cemetery, as published by Minto provides a sample of 115 tombs dating from the early of the seventh century to the first half of the sixth. Within the excavated cemetery there is a range of grave types and burial rites summarised in table 4.3.1.

Table 4.3.1 Burial rites

Tomb type and burial rite	Number
Cremation '*a pozzetto*' (shaft grave)	4
Cremation '*a buca*' (pit grave)	7
Cremation in a grave with an inhumation	4
Inhumation in a simple grave	75
Inhumation in a simple grave within a circle of stones	13
Inhumation in a chamber tomb	1
Inhumation in a chamber tomb within a circle of stones	11

The first observation to be made is that the cemetery contains both cremation and inhumation burials, in four cases both rites occur in the same grave. Minto (1921, 175-9) notes that it is not possible to attribute the change of rite to chronological factors alone since identical grave goods were found in some of the cremations and some of the inhumations. Perhaps the clearest observation to be made is that the cremations typically contained fewer grave goods than the inhumations.

The most common form of burial was inhumation in a simple grave (72.2%, 83 graves), (Minto 1921, 179-86). Typically, these graves were twice as long as they were wide and oriented East-West. A single body was laid at the bottom in a supine extended position with the head facing the East. A few burials contained traces of a funeral bed or a wooden platform onto which the body had been laid. The graves were filled with river pebbles which were carefully laid around the grave goods. Thirteen of these inhumations (17.3%) were marked out by being enclosed by a circle of stones, probably the remains of a tumulus. These same burials also contained the most precious, and the largest numbers of grave goods. The bodies were buried wearing clothes and personal ornaments and bronze and ceramic vessels were laid at their feet. To the North of the vessels were laid any banqueting equipment, tripods, candelabra, skewers etc. Fire dogs were consistently on the right side of the body. In the tombs containing arms dagger were found on the skeleton and spears to the sides with their points by the sides of the head. Chariots, where they were found, were placed above the body in the centre of the grave facing east and horse bits were found at the west end towards the north side of the grave.

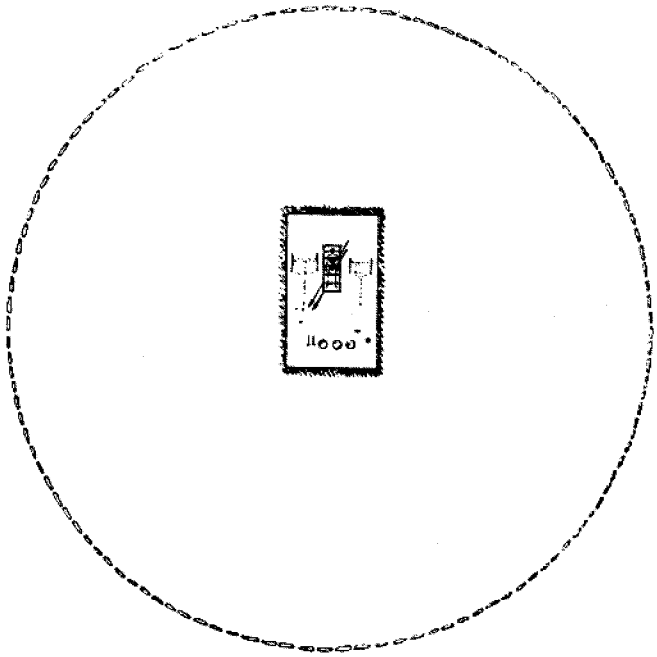


Fig. 4.3.1 Marsiliana tomb 109 Inhumation with 2 chariots in a grave within a stone circle (Minto 1921, Fig.7).

The 12 chamber tombs (10.4%), (Minto 1921, 186-87) were poorly preserved. The only grave goods recovered from these tombs were sherds of bucchero and probable etrusco-corinthian pottery, indicating that these graves are later than the grave inhumations which do not contain bucchero.

Chronology of the burials

Within the cemetery there is no clear horizontal stratigraphy, and the forms of burial are intermingled. It is not possible to discern any but the broadest chronological sequence in the graves. Three of the cremations contained late Villanovan type lunate razors and possibly a biconical

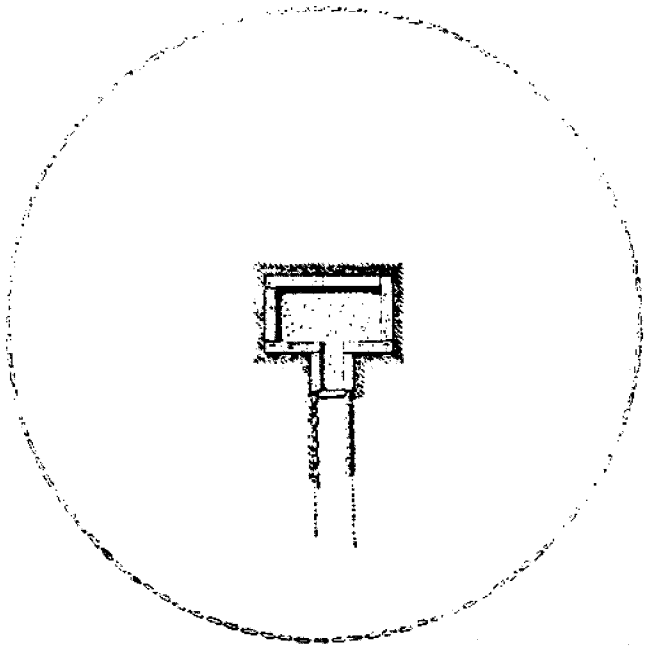


Fig. 4.3.2 Marsiliana Tomb 21, chamber tomb in a stone circle (Minto 1921, Fig. 4)

urn - none of these were found with inhumations. The inhumations which did not contain bucchero or etrusco-corinthian type ceramics can be considered as earlier than those that did, and the chamber tombs can be considered as the most recent burials.

The grave goods

The grave goods, particularly from the grave inhumations, provide the possibility of investigating any ranking within the buried population. The artefacts found with the burials fall into two broad categories; items relating to the appearance of the body of the deceased at the time of burial – personal ornaments, arms, jewellery, etc.; and items relating to activities associated with either the individual or the burial rite itself - vessels, chariots, banqueting equipment etc. Examination of the variations in the appearance of the corpse should yield a range of social *personae* presented in these burials and so enable some level of social reconstruction. Interpretation of the second class of items is more difficult as the extent to which they form part of the residue of the burial rite, perhaps a funeral banquet and ceremonial procession, rather than reflecting social activities performed by the deceased in life, is less clear.

Social Reconstruction

In order to attempt a social reconstruction of the buried individuals a first approach is to divide the tombs according to their contents.

Burial with arms

One of the most apparent differences between the assemblages of grave goods is those which do and do not contain defensive or offensive arms. This division effectively combatant individuals, from the non-combatants creating a sub-group of 43 burials (30 undisturbed and 13 disturbed). Thus about a third of the buried population bore arms in the grave. This group can be further investigated by considering other grave goods found with them in the undisturbed graves. These divisions are best illustrated in the form of a Venn diagram.

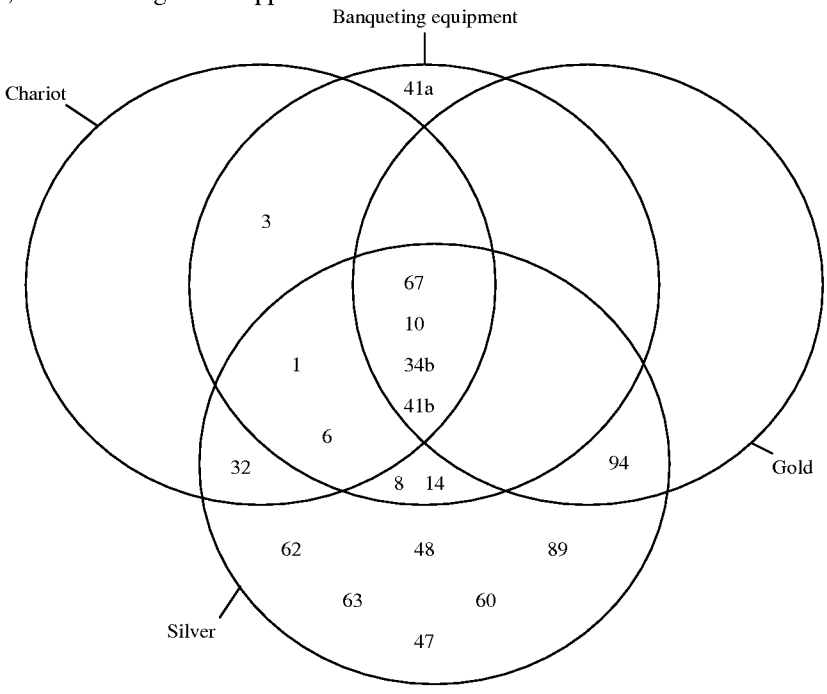


Fig.4.3.3 Grave goods associated with arms bearers (the numbers are those assigned to tombs during excavation)

If the richest burials are considered first four burials stand out as containing each of gold, silver, chariot and banqueting equipment (10, 34b, 41b, 67). Of the eight burials with chariots all but one also contain banqueting equipment indicating a close association between burial with chariot and burial with banqueting equipment. This is supported by the fact that in the sub-group of ten arms bearers buried with banqueting equipment all but three were buried with a chariot. Four of the burials with chariots do not contain gold and one neither gold nor silver. Moving on to the burials with banqueting equipment, four were buried with gold and all but two with silver. This suggests that there was an association between burial with a chariot plus banqueting equipment and wealth, expressed in terms of burial with silver or gold as four of the seven contain silver and gold and all but two of the burials with a chariot or banqueting equipment contain either gold or silver. Of these two exceptions one, 41a is probably not a burial at all but a platform for grave goods. However, burial with gold or silver does not necessarily equate with burial with chariot and banqueting equipment as one burial with gold and silver and six with silver contain neither. This comparison of the burials indicates that within the arms bearers those buried with chariot and/or banqueting equipment did tend to also be buried with precious metals, but that there was also a group of arms bearers buried with precious metals who did not receive burial with chariot or banqueting equipment.

If this analysis is extended further to include the remainder of the arms bearers buried without gold, silver, chariots or banqueting equipment, a further sub-group of eight burials with bronze vessels emerges (Fig 4.3.4). The cremations also all fall into this group of less rich burials although they partially overlap with the sub-group buried with bronze vessels.

This analysis leaves three undisturbed tombs containing arms unassigned, of these grave 38 may well be a female burial since as well as an iron knife it also contained 12 spindle whorls.

A further approach to analysing the group of arms bearers is to consider the types of arms they were buried with. The following tables summarise the data.

Arms bearers at Marsiliana without chariot, gold, silver or banqueting equipment
(undisturbed graves, the numbers are those assigned to tombs during excavation)

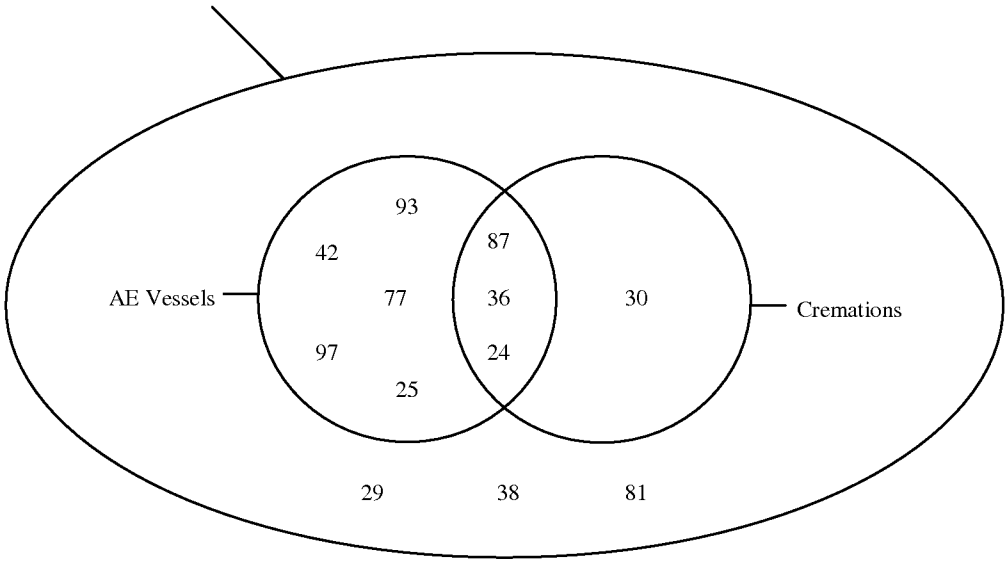


Fig.4.3.4 Arms bearers with fewer goods

Table 4.3.2 Minimum numbers of types of weapons in burials

Tomb	Bronze spear	Iron Spear	Bronze knife	Iron knife	Bronze axe	Iron axe	Sword or scabbard	Bronze shield	Total
47	-	3	-	2	-	1	-	-	6
32	1	2	1	1	-	1	-	-	6
94	-	2	-	1	1	1	1	-	6
3	-	2	-	2	-	1	-	1	6
60	-	2	-	2	-	-	1	-	5
77	1	1	-	2	-	1	-	-	5
1	-	1	-	1	-	1	-	1	4
41a	-	4	-	-	-	-	-	-	4
41b	-	-	2	1	-	-	-	1	4
87	-	1	-	2	1	-	-	-	4
14	1	1	-	-	-	1	-	-	3
34b	-	1	-	1	-	1	-	-	3
36	-	2	-	-	-	1	-	-	3
62	-	1	-	1	-	-	-	1	3
81	-	1	-	1	-	1	-	-	3

90*	-	1	-	1	-	1	-	-	3
6	-	1	-	-	-	1	-	-	2
8	-	2	-	-	-	-	-	-	2
24	-	2	-	-	-	-	-	-	2
25	-	1	-	-	-	1	-	-	2
29	-	1	-	-	-	1	-	-	2
30	-	1	-	-	-	1	-	-	2
42	1	-	-	1		-	-	-	2
67	-	1	-	-	-	-	-	1	2
89	-	-	-	1	-	1	-	-	2
96*	-	-	-	-	-	1	-	1	2
48	1	-	-	-	-	-	-	-	1
18*	1	-	-	-	-	-	-	-	1
35*	-	1	-	-	-	-	-	-	1
46*	-	-	-	-	-	1	-	-	1
93	-	-	-	-	1	-	-	-	1
10	-	-	-	-	-	1	-	-	1
88*	-	1	-	-	-	-	-	-	1
16*	-	1	-	-	-	-	-	-	1
97	-	1	-	-	-	-	-	-	1
34a*	-	-	-	-	-	-	1	-	1
99b*	-	1	-	-	-	-	-	-	1
45*	1	-	-	-	-	-	-	-	1
85*	-	1	-	-	-	-	-	-	1
9*	-	1	-	-	-	-	-	-	1
15*	1	-	-	-	-	-	-	-	1
63	1	-	-	-	-	-	-	-	1

* Disturbed burial

Table 4.3.3 All combinations of arms found in undisturbed burials

Combination of arms	Number of occurrences	Tombs
Spear, axe	4	6, 25, 29, 30
Spear, knife, axe	3	47, 34b, 81
2 spears, axe	2	14, 36
2 spears	2	8, 24
Spear	3	48, 97, 63
Axe	2	93, 10
Spear, knife	1	42
Spear, shield	1	67
Spear, knife, shield	1	62
Spear, knife, axe, shield	1	1
Spear, 2 knives, axe	1	87
2 spears, knife, axe	1	32
2 spears, knife, axe, sword	1	94
2 spears, 2 knives, sword	1	3
2 spears, 2 knives, axe, sword	1	60
2 spears, 2 knives, axe	1	77
4 spears	1	41a
Knife, axe	1	89
3 knives, shield	1	41b

Table 4.3.4 Combinations of arms found in burials synthesised into groups by types of weapons.

Combination of arms	Number of occurrences	Tombs
Spear(s), knife(s), axe	7	32, 34b, 38b, 47, 77, 81, 87
Spear(s), Axe	6	6, 14, 25, 29, 30, 36
Spear(s)	6	8, 24, 41a, 48, 63, 97
Spears, knife, axe, sword	2	60, 94
Axe	2	10, 93
Spear(s), knife(s)	1	42
Spear(s), shield	1	67
Spears, knives, sword	1	3
Spear, knife, shield	1	62
Spear, knife, axe, shield	1	1
Knife(s), Axe	1	89
Knives, shield	1	41b

Table 4.3.5 Occurrence of weapon types in tombs.

Types of weapon	% of burials with weapon
Spear	86.7%
Axe	63.3%
Knife	50%
Shield	13.3%
Sword	10%

This analysis shows that the spear was the most common weapon buried, followed by the axe. Knives were found in half the graves containing arms. Shields and swords were rare. The most common combinations of weapons were the spear alone; the spear and axe; and the spear, axe and knife. Comparison with the previous analysis of the graves of arms bearers indicates that there is no particular combination of weapons associated with those buried with a chariot suggesting that the chariot may have been more ceremonial than practical. No other associations are clear, for example the simpler burials are not related to those just buried with the spear. Perhaps the only comment that can be made is that all of the burials with a shield also contained silver. Two of the four burials with gold, silver, a chariot and banqueting equipment also contained a shield.

Perhaps the most remarkable observation to be made about the collection of arms from the burials is that it contains no body armour. Helmets, greaves and cuirasses which are known from this period are absent, unless they were made from leather and have not survived. Spivey and Stoddart (1990, 129-34) have suggested that many of the arms buried in Etruscan tombs were deposited for symbolic purposes and need not necessarily reflect the actual panoply used in warfare. However, at Marsiliana, with the possible exception of the bronze shields (which almost certainly originally had some more substantial backing), the arms all seem to be decidedly utilitarian. Neither do arms seem to have been used within the group of arms bearers as a means to display differences in status or military role. Similarly the chariot is often taken to have a ritual rather than military function but at Marsiliana although it does occur in the more complex, higher status burials it is largely limited to the group of arms bearers in the cemetery. Therefore, whatever the ritual uses the chariot they were primarily rituals of the military elements of society.

The issue of the symbolic appearance of the warrior and the actual goods buried in the grave is thrown into further relief when representations of warriors from the nearby contemporary tomb at Perazzeta are taken into consideration (Minto 1921, 269-72). Here two horse nose guards from a chariot burial depict a warrior. The figures which are identical are armed with a circular shield, a crested open faced helmet, a sword, spear and bow and arrow. This image does not closely coincide with the goods from the graves. No helmets or bows and arrows were found at Marsiliana and shields and swords are rare. Furthermore, the axe which was frequently in the graves does not appear. The root of this difference is that the warrior depicted is armed in the Greek fashion as a hoplite and the grave goods indicate that the warriors of Marsiliana did not use that combination of arms and amour.

Although the arms bearers my be divided into spearmen (all except 4) and those (8) buried with chariots. What is not apparent is any evidence for the role of cavalryman or the role of hoplite represented in the burials. Body armour does not occur in any of the graves and the only defensive

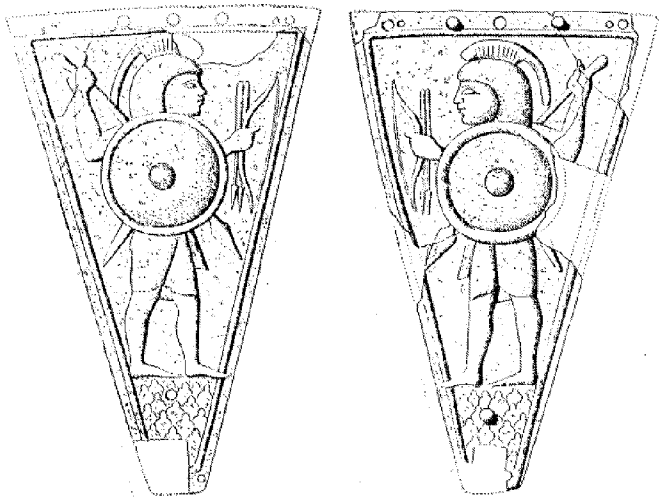


Fig. 4.3.5 Warriors from Perazzeta (Minto 1921 Fig.29)

weapons are rare shields. Weapons other than spears occur in a sporadic fashion with little regularity. The only possible exception is the axe which is fairly common. This distribution of weapons in a military unit would provide a group armed with spear and hand weapon and a group with spear alone.

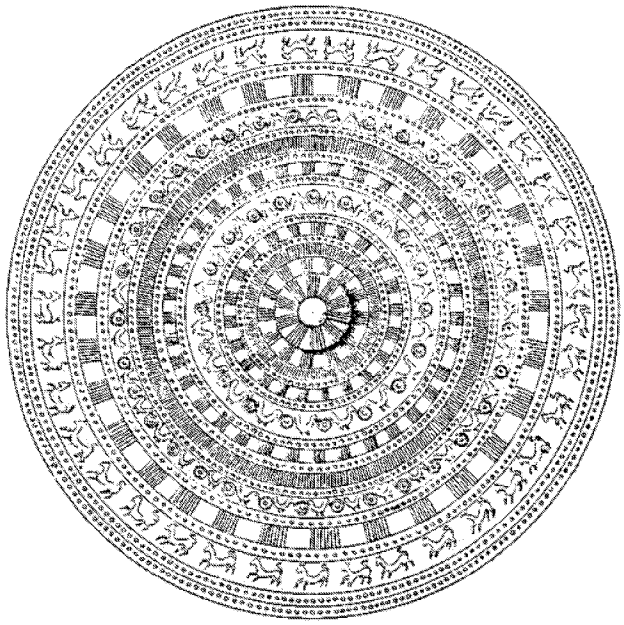


Fig.4.3.6 Marsiliana tomb 62, reconstruction of bronze shield (Minto 1921, Fig. 27)

Burials without arms

Moving on from the arms bearers, the burials without arms can be subdivided along the same lines by grouping the burials according to their contents, of chariots, banqueting equipment, gold and silver (Fig. 4.3.7). Here a hierarchy can be observed in terms of the distribution of metals. Six contain gold, 15 silver and 12 bronze vessels. A first observation to be made is that chariots, banqueting equipment and precious metals were not confined to the arms bearers and that the burial rites of other members of

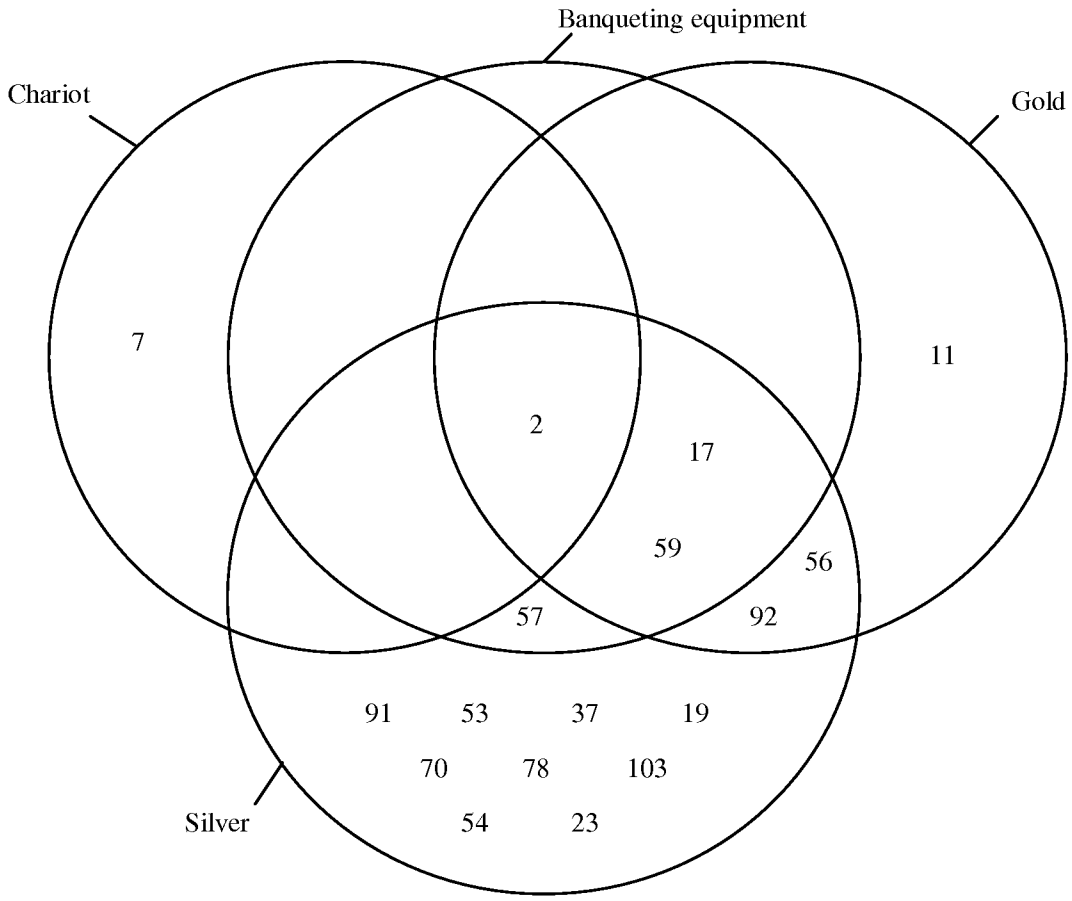


Fig. 4.3.7 Undisturbed burials without arms

society also included these items. The two chariot burials without arms (2 and 7) indicate that chariots had a function in the burials separate from any combative role represented in the burial rite. That being said, chariots and banqueting equipment are much less common in the tombs without arms. Only four burials without arms contained banqueting equipment whereas ten with arms also had banqueting equipment.

Table 4.3.6 Finds in tombs without arms

Item	% of tombs with arms with item total 31 tombs	% of tombs without arms with item total 39 tombs
Chariot	30 %	5.1 %
Banqueting equipment	33.3 %	10.3 %
Gold	16.7 %	15.4 %
Silver	53.3 %	38.5 %

Any association between burials with arms and burials with precious metals are less marked as demonstrated by the table of percentages.

If the analysis is extended in the same way as above to the graves without precious metals three groups emerge (Fig. 4.3.8). One with bronze vessels, the cremation and burials none of these goods. The groups are mutually exclusive. A greater proportion of the arms bearers were buried with bronze vessels but a lesser proportion were cremated. It is possible that the cremations are a chronologically earlier group. The burials with bronze vessels may represent a lower status burial rite than the burials with precious metals.

Age and Gender

So far, in summary, a number of social or ritual roles for the deceased have emerged, the warrior, the charioteer and the banqueter along with an indication of the material status of the deceased provided by the presence of precious metals. Unfortunately, bones were poorly preserved at the cemetery and no analysis of sex or age is provided by Minto. In one case a grave (burial 95a) was identified as belonging to a juvenile due to the size of the skeleton. This burial is a reminder that the group of individuals at the cemetery is not representative of the entire contemporary population, if it were, many more juveniles and children would have been found. The inhumations are almost entirely adult burials.

If we adopt traditional interpretations of grave goods and assume that the burials with arms are male, and burials with artefacts related to spinning and weaving are female the division yields 30 males and 15 females. However there is some overlap, five tombs contain both arms and weaving equipment. These require further examination. Tomb 67 is explicable as it is a multiple deposition, 34b contains a soapstone spindle whorl (Minto 1921, 73) this could easily be a bead, similarly tomb 10 contains 2 'spindle whorls' of glass paste and bronze, probably also beads (Minto 1921, 48-49). More problematic are tomb 38, mentioned above which contains 12 *impasto* spindle whorls and a knife blade, and 48 which contains a bobbin and a spear. This leaves 28 males, 13 females, two ambiguous and

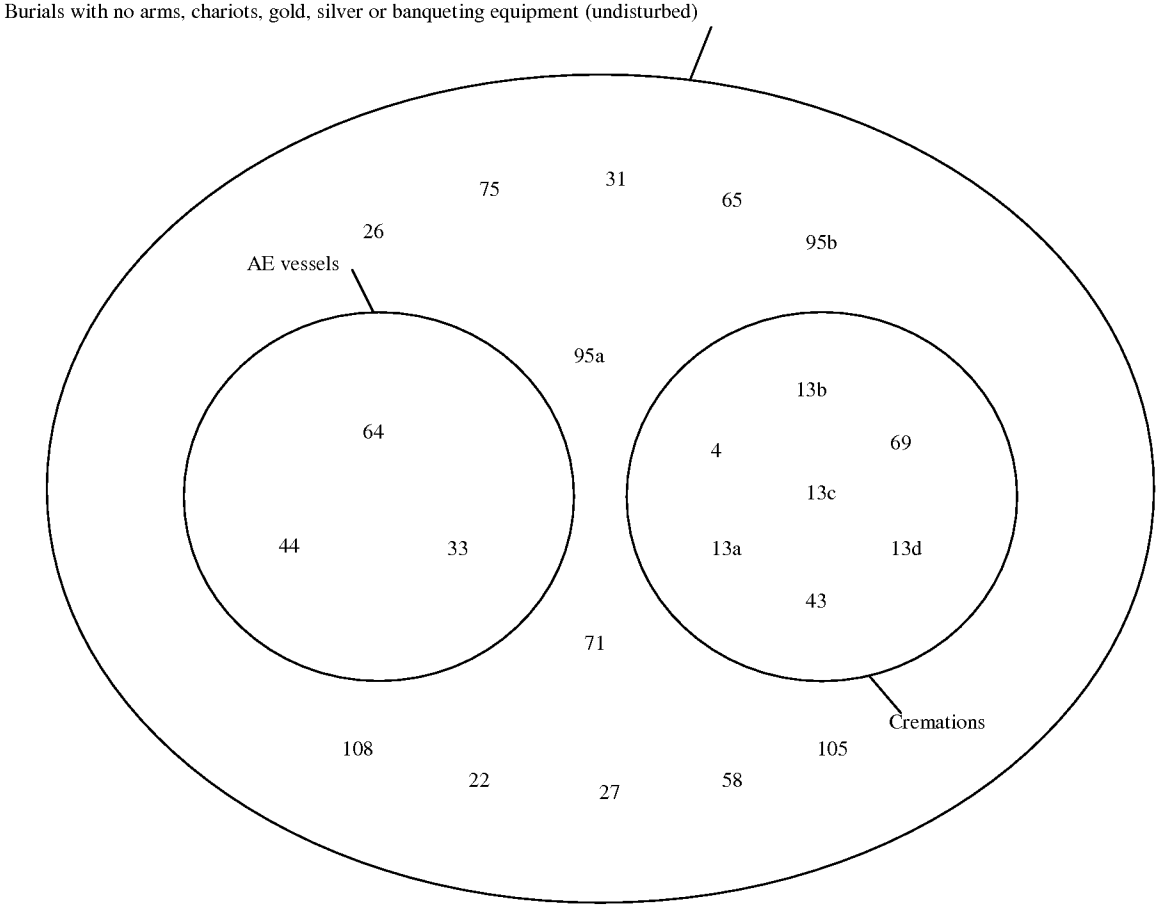


Fig. 4.3.8 Undisturbed burials without arms and fewer finds

27 undetermined. Nine of these 27 contained no grave goods, but division of the remaining 18 is possible by considering other criteria. By inspection of the grave goods there would appear to be an association between tombs with weaving equipment and tombs with amber items, this association may be tested for significance with a χ^2 test.

Undisturbed tombs	+ weaving	- weaving	totals
+ amber	10	10	20
-amber	5	45	50
totals	15	55	70

$\chi^2 = 13.576$ which is significant at $p = 0.001$ with 1 degree of freedom suggesting that the presence of the two items is not unrelated. Yule's $Q = 0.8$ suggesting there is a positive association, however $\phi^2 = 0.194$ indicating that it is not a particularly strong relationship. If the same tests are applied to the relationship between tombs with arms (assumed to be male) and those with amber it is possible to assess the value of amber in signifying a female burial.

Undisturbed tombs	+ arms	- arms	totals
+ amber	5	15	20
-amber	25	25	50
totals	30	40	70

$\chi^2 = 3.646$ which is only significant at $p = 0.1$ with 1 degree of freedom suggesting that the presence of the two items are not clearly related. Yule's $Q = -0.5$ suggesting there is a negative association, however $\phi^2 = 0.052$ indicating that it is not at all strong. Comparing these results it may be concluded that relationship between amber and weaving equipment is more significant than that between amber and arms and that there is a positive relationship between amber and weaving equipment and a negative relationship between arms and amber. Thus in the absence of other indicators amber may be taken to indicate that a burial may have been female (assuming that weaving equipment signifies a female burial).

This analysis provides 10 tombs with amber but without weaving equipment. Of these two, 1 and 47 contain arms and one, 7, a chariot. The remainder may be assigned to the possibly female group yielding 28 male, 20 female, two ambiguous, nine without goods and 11 unassigned.

This cautious division of the burials is potentially flawed since the arms and weaving equipment are not necessarily indicators of biological sex of the inhumed. At best they might be indicators of social roles, or at least roles which were ascribed to a dead individual during the burial rites. The tombs which contain goods providing contradictory signals are a reminder that gender is a negotiated condition and not clearly signalled by material culture.

Wealth

The inclusion of precious metals in some of the depositions also provides a hierarchical division of the burials, in both qualitative terms, gold, electrum, silver and quantitative

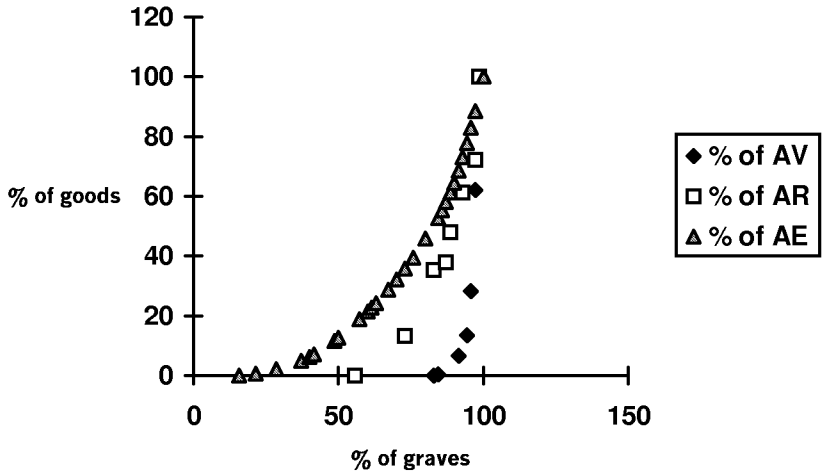


Fig.4.3.9 Distribution of metals in graves

Table 4.3.7 Gini's coefficient for metals

Grave Good	Gini's coefficient (G)
Gold (AV)	0.947
Silver (AR)	0.756
Bronze (AE)	0.536

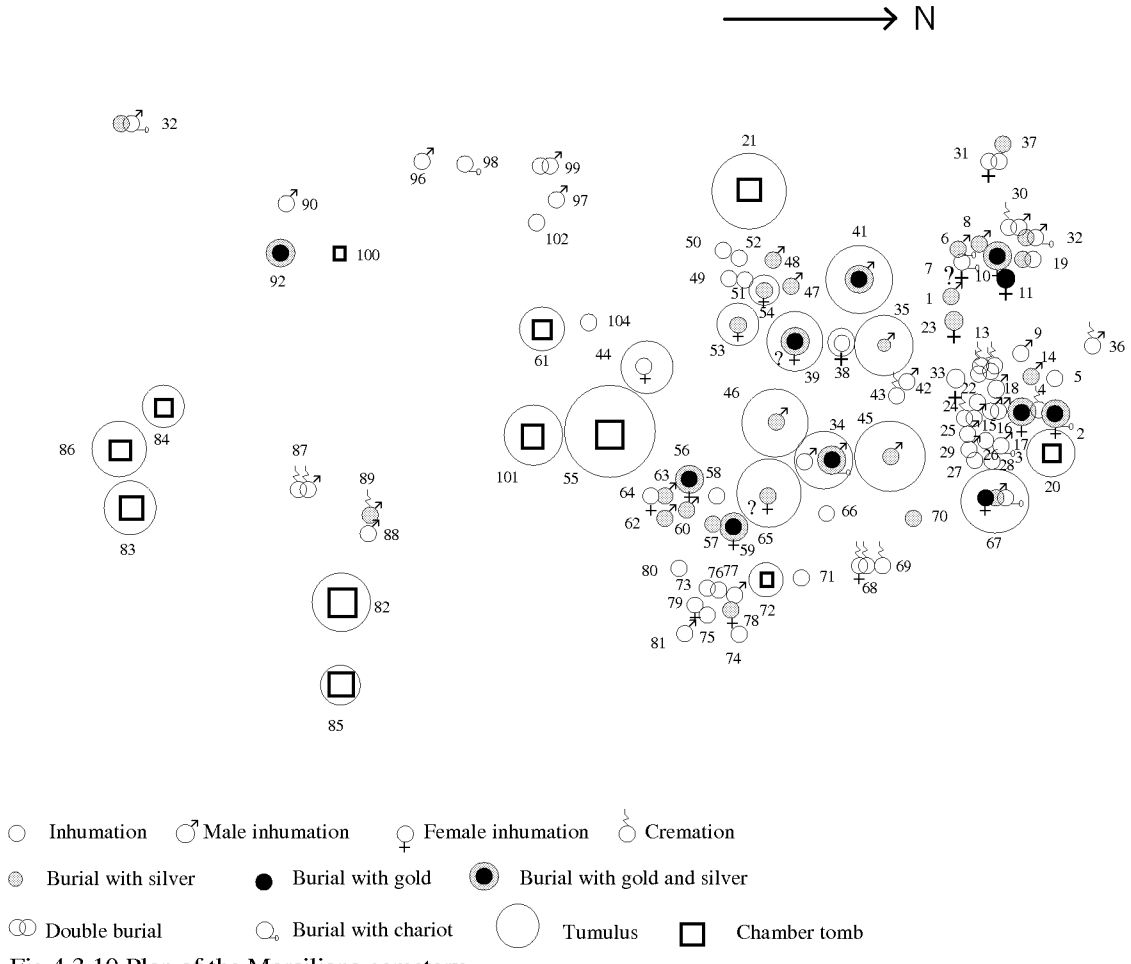
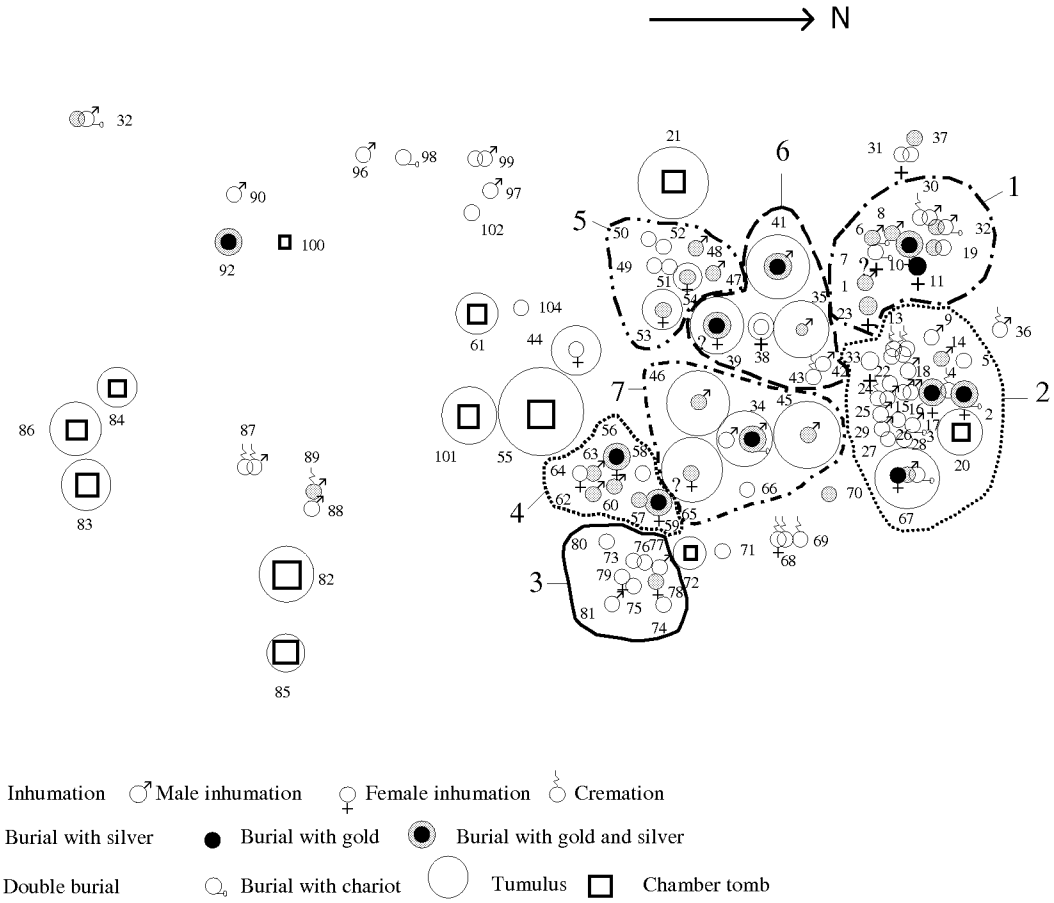


Fig.4.3.10 Plan of the Marsiliana cemetery

terms, in numbers of items. The nature of the distribution of metal grave goods can be plotted with Lorenz curves and quantified with Gini's coefficient (Morris 1987, 141-3). The curves illustrate that the distribution of gold in the burials is extremely uneven. Less than 15% of the distribution of the burials contained all of the gold and most of the gold was found in a very few burials. This indicates that burial with gold was restricted to a very few members of society. Silver was more common in the burials but the shape of the distribution is similar, though less extreme than that of gold. Both of these distributions are different to that of bronze. The distribution of bronze is much more even and is due to the fact that the metal is much more frequent in the burials and a much broader range of artefacts were produced in bronze. The frequency and distributions of the metals reflects the traditional scale of relative values of the metals, and so presumably the relative richness of display in the burial rites of individuals. However, the exponential shape of the curves for gold and silver suggests that there was a relatively sharp divide between burials with and without precious metals. The nature of this differentiation in the burials may be a reflection of the material wealth of the deceased in life or of the need to display wealth or prestige in the tomb, but if this is the case it suggests that the highest levels of wealth or display were confined to a few individuals within the group. This distribution of wealth in the burials transcends the possible male/female divide, indeed the richest burials seem to be female (burials with gold: 6 female, 2 male, 2 uncertain). It also fairly closely follows the hierarchies established by consideration of chariots and banqueting equipment, although a number of tombs without these attributes do contain silver items.

Spatial distribution of the tombs

Within the spatial distribution of burials it is possible to divide the graves and tumuli into subjective clusters. Seven groups containing most of the graves, but few of the chamber tombs, emerge. Examining the positions of these groups a cluster of tumuli, groups 6 and 7, are flanked by concentrations of graves; groups 1 and 2 to the north and 3, 4 and 5 to the south. If the pattern of disturbance at the cemetery is considered only two of these groups are undisturbed, 1 and 4.



4.3.11 Grave groups in the Marsiliana cemetery

The groups share a striking characteristic, both contain two rich female burials. This pattern may also be repeated in the other groups: 5 contains two undisturbed females with silver in tumuli and group 2 likewise two undisturbed females with gold and silver, but also a third rich female in the exceptional triple burial in tomb 67. Other than this the groups seem to contain a variety of other burials and no further distinctive patterning emerges. This suggests that the groups are not representative of functional social differences between individuals - there are no groups of warriors, women or

paupers for example. This leaves the possibility that, if these groups are representative of anything, it may be kinship on the one hand (either by marriage or matrilineal descent) and the distinction of burial within a tumulus on the other.

The size of the burying group

The number of burials and the length of use of the cemetery can be used to reconstruct the size of the burying group. The formula

$$p = \sum \left(\frac{na}{t}\right)$$

where p is the population in the burying group, n the number of burials made, a the average age at death of the adult group and t the length of time the cemetery was in use has been suggested as suitable for use with adult cemeteries (Morris 1987, 74). So in this case with an average age at death of 20;

$$p = \left(\frac{102 \times 20}{150}\right) = 13.6$$

and with an average age of 35

$$p = \left(\frac{102 \times 35}{150}\right) = 23.8$$

The calculation suggests a group of 14 to 24 adults, depending on the estimate of life expectancy, would be sufficient to produce this number of burials. The result does not take account of the possibility of population growth within the period, and 14 - 24 may be considered as a mean group size. The figure is surprisingly low and certainly puts claims for Marsiliana as a major settlement into a new perspective. If we extrapolate our c.10% of elite burials to this burying group we arrive at the conclusion that only one, or two - perhaps a male - female pair of this elite was alive and dominant at any given moment. Furthermore it suggests that only one or two charioteers (total 11 burials) and five to eight banqueters (total 33 burials) were alive at any moment. This analysis of the group yields a striking reconstruction of a single dominant individual couple and some few banqueters among the perhaps six to eleven other couples in each cohort of the burying population. Furthermore, it raises the possibility that the c.10% of elite burials in the cemetery are in fact representative of about five generations (allowing thirty years each) of a dominant dynasty in the society. It is not possible to place the tombs in chronological order which might support this notion. However one of the circles (tumuli) contains a pair of burials (tomb 34) and tomb 67 contained three interments including at least one male and one female suggesting that a spatial relationship between burials may indicate some form of kinship.

Having established the magnitude of the burying group the nature and position of the settlement they occupied may be considered. The first point to consider is that a group of 13 - 24 adults is relatively small. Too large to be the occupants of an isolated rural farm and only large enough to occupy a small village. In this optic it is difficult to image how such a group, or settlement might be considered as a rival of Vulci as in the reconstruction of Colonna (1977). Indeed the size of the group indicates that it could if necessary migrate relatively easily. If we divide the burying group in to households we arrive at between 6 to 12 households (allowing 2 to 4 adults in each). This too indicates a relatively small settlement may have produced the observed number of graves at Marsiliana.

Another factor brought in to focus by this estimation of the size of the burying group is the intensity of the concentration of wealth represented in the elite burials. This allows us to hypothesise that it was only the dominant individuals or couple who were accorded the status of burial with gold and only a few others were buried with silver. Assuming that this social persona created by the burial goods does in fact represent roles played by the individual in life the society may be reconstructed as dominated by one or two high status individuals and that this status and wealth was passed from one generation to the next and not gradually diluted to a larger number of individuals thus preserving a ruling dynasty.

Conclusions

The translation of these burial assemblages into a reconstruction of the burying society is far from straight forward, given the symbolic nature of some of the goods and also the fact that the motivation for burying an individual with particular goods is unknown as is the actual significance of particular goods or combinations of goods. Furthermore we are dealing with goods destined to work in the tomb and not necessarily in every day life. The role and status of an individual in death may well have differed from that carried in life. The lack of detailed evidence for the age of the deceased creates further problems. Within the cemetery only adults, both male and female, seem to have been accorded a burial with no apparent preferential inclusion of either group. It is difficult to be certain about other criteria for burial in the cemetery, but the hierarchies apparent in the burials suggests that a diverse section of the adult population was buried there. Generally the burial rites indicate that most of those buried in the cemetery were either wealthy enough or of a suitable social standing to be buried with some grave goods, inhumation without goods is uncommon. However, above this standard only a small proportion of the burials stand out as an elite marked by the variety of criteria discussed above.

The presence of an elite class of burial in the cemetery seem likely given the distribution of precious goods and potential status indicators. The consideration of the potential size of the burying group reinforces this supposition. Other than an elite other social personae emerge, the fighter, the charioteer and the banqueter, some of which overlap. It seems probable that most of the burials with arms are male but the possibility remains that some males were buried without weapons. Two of the cremations (36 and 89) contained lunate razors but no arms and are almost certainly male, but the burial rite is firmly in the Villanovan tradition and so they can be considered as earlier than the main sequence of inhumations. A further burial contained a chariot but no arms, this could be a be a female deposition even though chariots are closely associated with burials with arms (Bartoloni and Grottanelli 1984).

Another social role, the banqueter, more certainly crosses between genders. A proportion of both probable males and

females seem to be buried with metal banqueting equipment. This inclusion of women in feasting activities and wine drinking becomes a distinctive feature of Etruscan society and, in contrast to the Greek symposion, and is clearly apparent in later wall paintings. The identification of a banqueting class within the burials partially, but not entirely coincides with the identification of the class of charioteers within the military burials.

Magliano in Toscana

In the area between Magliano in Toscana and the ford in the river Albegna near Marsiliana numerous chamber tombs have been discovered. Dennis (1848, 267-8) provides the earliest description of the necropolises, but with little detail. In 1935 Minto published plans and lists of finds from a number of robbed tombs in the area (Minto,1935). The most comprehensive survey to date is an dissertation by Derek Kennet which grew from the work of the Albegna Valley Survey (Kennet, 1984; Johnston and Kennet, 1984). Recently the Soprintendenza Archeologica di Toscana has conducted rescue excavations in the area (Rendini, 1989). Despite this research few, if any, tombs have been recovered intact from the necropolises and no undisturbed tombs have been published. As a result, a wide range of information has been recovered but a description of the form of burial ritual practised in the necropolises can only be provisional.

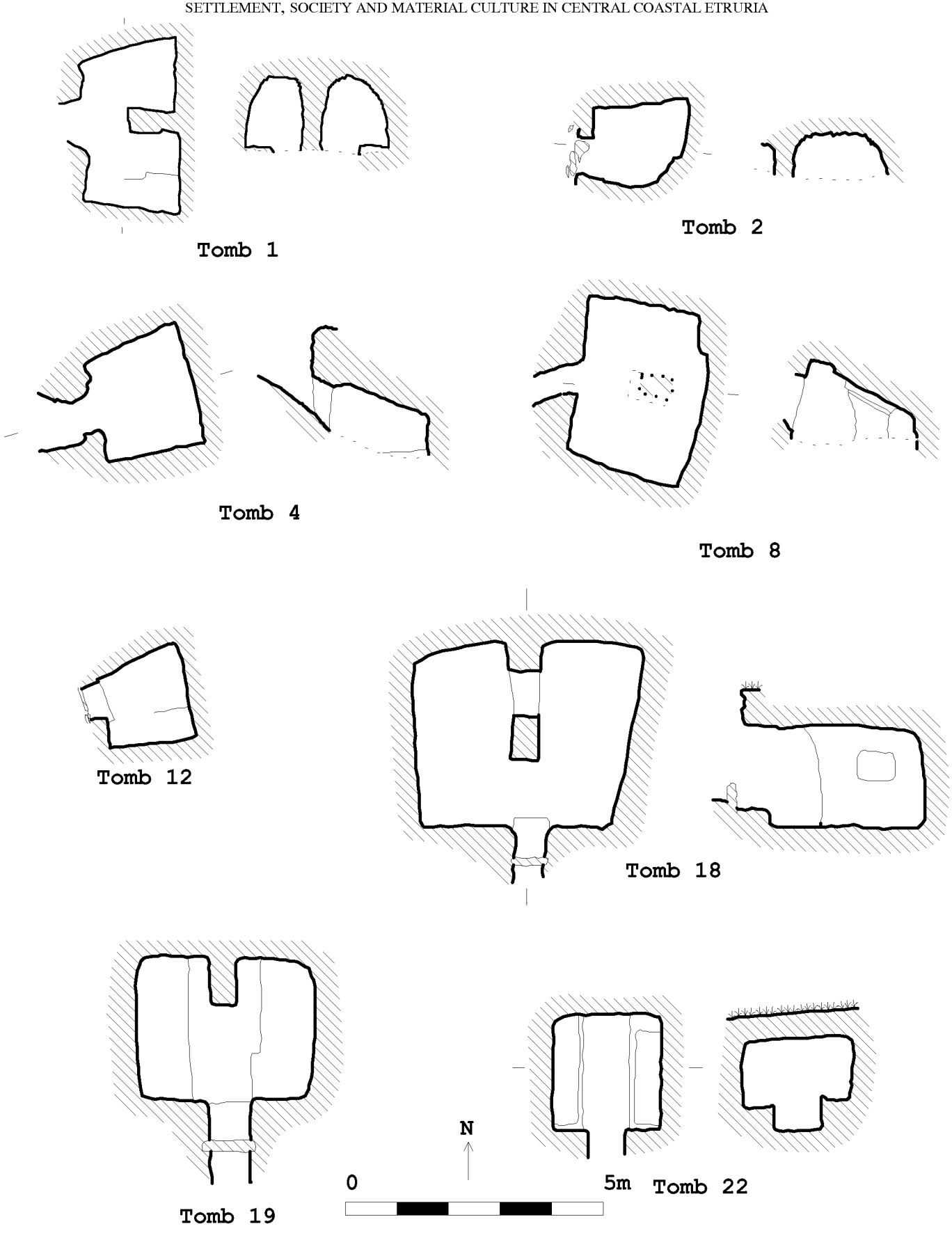
The tombs lie to the south west and south east of Magliano and are cut into Pleistocene deposits of lacustrine limestone. The landscape consists of a rolling series of low hills formed by the northern affluents of the Albegna, Fosso Albegnaccia, Fosso Patrignone, Fosso Butterino, Fosso Cordigliano and Fosso Castione. The tops of the hills are fairly level at 110-135m, with steep slopes leading to level valley bottoms. The soils are extremely eroded and in many areas the limestone itself is ploughed for the cultivation of cereals (van Berghem *et al.* 1984, 78-81). The tombs tend to have been cut into the steepest slopes around hill tops and the sides of valleys, to take advantage of the exposures of limestone and to enable the construction of a relatively gently sloping dromos as an entrance passage for the tombs. This use of the topography and the rolling landscape causes a clustering of the tombs, Minto (1935, 17) identified 9 different necropolises within the area. Kennet (1984, 31-2) rejects this division into small necropolises and suggests that the spatial clustering is a result of patterns of land use and tomb robbing. Each part of the necropolis consists largely of chamber tombs but a small number of rock cut graves have also been recorded. A selection of the plans of tombs recorded at Magliano are reproduced below.

Typically the chambers are rectangular with a floor area of 10 - 20m^2. Although some are a simple single chamber (e.g. Nos. 4, 12, 22) most have a longitudinal central partition forming two burial areas within the tomb. The form of partition varies from an embedded pilaster in the back wall (No.2), to a short wall (Nos. 1, 18), a long wall (Nos. 18, 26, 37, 44) and to a free standing pilaster (Nos. 8, 33, 36). Tomb 18 has a window in the partition. Some of the tombs incorporated two to four rock cut benches along their walls for the deposition of bodies. The tombs were sealed with slabs of limestone (e.g. Nos. 12, 18, 19, 26, 33, 37). Few tombs depart from this pattern, tombs 2, 12 and 30 may well be unfinished tombs of the usual design. Generally the interiors of the tombs were undecorated, but the pilaster in No .8 bore a rudimentary Tuscan capital, and others (e.g. No. 36) had articulated door frames. Two tombs stand out as they preserved traces of wall painting. One, tomb No. 18, located by the survey, was poorly preserved but had been recorded in the nineteenth century (Braun, 1841; Dennis, 1848, 267). The decoration consisted of a bearded sphinx on the eastern part of the north wall (Grassini, 1934; Messerschmidt, 1926; Michelucci, 1984, 387-9, Tav.IVc; Minto 1935, 35). The second, better preserved, bore on three walls a zoomorphic frieze of lions (Rendini, 1989, 484). Both have been dated to the end of the seventh century. Further tombs are illustrated in Kennet (1984) and Minto (1935). Closely similar chamber tombs are unusual in Etruria, but tombs with partitions or pilasters have been found at Saturnia in the upper valley (Minto 1925, 663), Castro in the Fiora valley, Celleno east of Bolsena, Monteriggione and around Chiusi where similar tomb paintings are also found (Camporeale 1977, 226-7). The following table summarises the tombs known from the area (from Kennet, 1984, 35-40 with amendments).

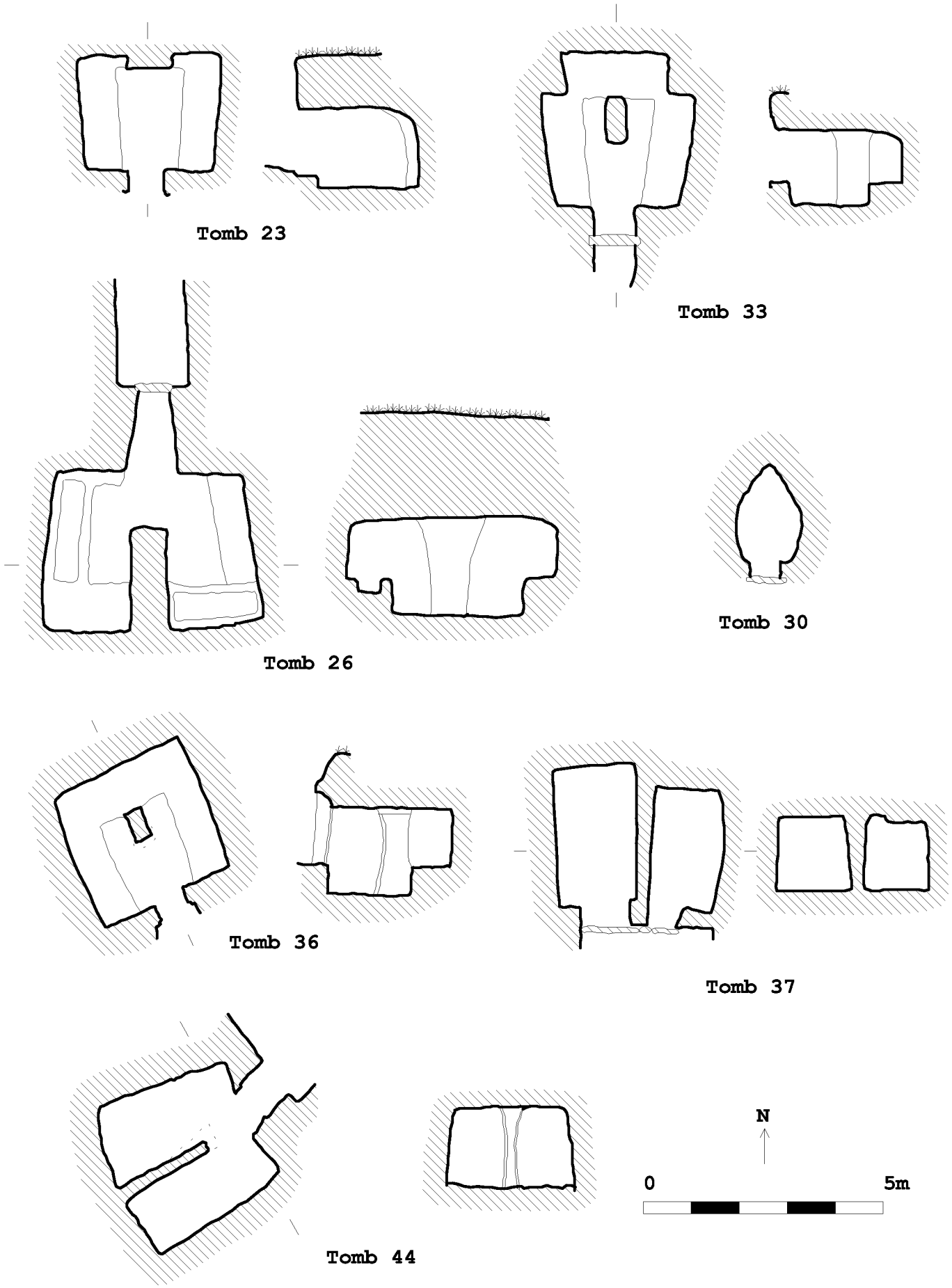
Table 4.3.8 Magliano tombs

Survey No.	Kennet	Type	Bibliography	Notes
MAR 303.1	1	Partition		
MAR 303.2	2	Simple		
MAR 303.3	3	Partition		
MAR 303.4	4	Simple		
MAR 303.5	5	Partition		
MAR 303.6	6	Simple		
MAR 303.7	7	Pilaster		
MAR 303.8	8	Pilaster		
MAR 303.9	9	Simple		
MAR 303.10	10	Simple		
MAR 303.11	11	Partition		
MAR 303.12	12	Simple		
MAR 303.13	13	Partition	Minto 1935 25, No.1	
MAR 303.14	14	Partition	Minto 1935 26, No.2	
MAR 303.15	15	Simple	Minto 1935 26-7, No.3	
MAG 100.1	16	Partition		
MAG 100.2	17	Simple		
MAG 201	18	Partition	Minto 1935 36-9, No.1	

MAG 201	19	Partition	Minto 1935 39-44, No.2	
MAG 201	20	Partition	Minto 1935 44-5, No.3	
MAG 201	21	Partition	Minto 1935 45, No.4	
	22	Simple	Minto 1935 33, No.1	
	23	Partition	Minto 1935 34, No.2	
SD 157	24	Partition		2 tombs
MAR 305	25	Partition		
	26	Partition	Minto 1935 30, No.1	
	27	Partition	Minto 1935 31, No.2	
SD 301.1	28	Simple	Johnston and Kennet 1984	
SD 301.2	29	Simple		
	30	Amphora	Minto 1935 49, No.2	
	31	Simple	Minto 1935 47, No.1	
	32	Partition	Minto 1935 49, No.2	
MAG 200	33	Pilaster	Minto 1935 51, No.1	
MAG 200	34	Pilaster	Minto 1935 52-6, No.2	
MAG 200	35	Pilaster	Minto 1935 56-7, No.3	
MAG 200	36	Pilaster	Maetzke 1956, 8 No.2	
MAG 200	37		Maetzke 1956, 8 No.3	
SD 300.3	38	Partition		
SD 300.4	39	Partition		
SD 300.5	40	Partition		
SD 300.6	41	Partition		
SD 300.7	42	-		
SD 302.1	43	Partition		
SD 302.2	44	Partition		
SD 302.3	45	Partition		
MAG 102	46	-		
MAG 103	47	-		
MAG 101	48	Grave		
MAR 304	49	Grave		
MAR 310.0	-	Partition	Rendini 1989, 483-4	Painted
MAG 17.0	-	Scatter		
MAG 22.2	-	Scatter		House/tomb site
MAG 24.0	-	Scatter		
MAG 25.0	-	-		
MAR 48.0	-	Scatter		
MAR 53.2	-	Scatter		House/tomb site
MAR 60.0	-	Scatter		
MAR 64.0	-	Scatter		
MAR 75.0	-	Scatter		
MAR 110.0	-	Scatter		
MAR 113.0	-	Scatter		
MAR 114.0	-	Scatter		
MAR 116.0	-	Scatter		
MAR 119.0	-	Scatter		
MAR 125.0	-	Scatter		
MAR127.0	-	Scatter		
MAR301.0	-	Scatter		
MAR306.0	-	-		Chamber
MAR308.0	-	-		Chamber
MAR309.0	-	Partition		6 tombs excavated by Rendini
SD42.0	-	Scatter		
SD54.0	-	Scatter		
SD55.0	-	Scatter		House/tomb site
SD156.0	-	Scatter		
SD158.0	-	Scatter		
SD159.0	-	Scatter		
SD165.0	-	Scatter		House/tomb site
SD168.0	-	Scatter		House/tomb site
-	-	-	Minto 1935, 45-7	1 chamber tomb
-	-	Simple	Minto 1935, 57-8	Constructed with tumulus
-	-	Partition/ simple	Minto 1935, 19-24	7 tombs



4.3.12 Selection of Magliano chamber tombs 1 (planned by D.Kennet)



4.3.12 Selection of Magliano chamber tombs 2 (planned by D.Kennet)

Table 4.3.9 Finds from Magliano tombs

Tomb	19,1	20,2	21,3	21,4	22,5	23,6	24,7	30,1	39,1	39,2	44,3	45,5	52,2	Totals
Bronze jewellery	1	-	-	1	-	-	-	-	-	1	1	4	-	8
Arms	-	-	-	2	-	-	1	-	-	-	-	-	-	3
Spindle whorls	7	-	-	-	-	-	-	-	-	-	-	-	-	7
Bucchero	3	1	-	14	12	4	8	-	1	7	1	3	5	59
Impasto	1	5	1	14	-	6	6	-	-	-	-	1	-	35
Etrusco-Corinthian	3	2	-	3	-	7	3	-	1	3	-	-	-	22
Etrusco-Corinthian aryballos/alabastron	2	-	-	4	-	-	-	-	1	1	-	1	1	10
Black figure	-	-	-	-	-	-	-	1	-	-	-	1	-	1
Totals	17	8	1	38	12	17	18	1	3	12	2	10	6	145

Minto (1935) published finds from a number of these tombs summarised above (table 4.3.9). The tombs are identified by page and tomb numbers in Minto (1935).

None of these tombs were certainly undisturbed and metalwork and figured wares may well be under represented. However the first seven tombs on Poggio Volpaio were excavated by the same Don Tommaso Corsini responsible for the excavation of Marsiliana and Minto was meticulous in his publications so it can be assumed that the publication presents all that was found in these tombs. These figures suggest that the grave goods consisted of largely ceramic vessels, bucchero, impasto and Etrusco-Corinthian wares. Personal ornaments, arms and Attic figured wares were rare.

A tomb group from Poggio Volpaio

The find

The material presented here was found on Poggio Volpaio by the survey. The finds were dumped on the ground and not in association with any archaeological structures. It would seem that the find derives from tomb robbing activity and represents material discarded by a robber after the sack of a tomb.

The material is described and illustrated in detail in section 6.4 below, in isolation from the main body of the pottery from the survey as it forms the single most coherent group of pottery from a tomb discovered by the survey in the valley.

Table 4.3.10 Summary of Ceramic Vessels from Poggio Volpaio

	Chalice	Kantharos	Cup	Bowl	Oinochoe	Jar	Other	Minimum Vessels	Total Sherds
Bucchero	6	2	1	-	2	-	2	13	35
Buccheroid Impasto	6	1	-	2	2	-	-	11	43
Impasto	8	-	-	12	-		1	21	60
Coarseware	-	-	-	-	1	3	-	4	25
Corinthian	-	-	-	-	-	-	1	1	1
Etrusco-Corinthian	-	-	1	-	-	-	-	1	1
Totals	20	3	2	14	5	3	4	51	165

Dating

The majority of the pottery from Poggio Volpaio can be confidently dated between 625 and 550, particularly the chalices. Although the fragment of Corinthian pottery (51) is small the style of decoration with an animal and rosettes suggests a date between the last quarter of the seventh and the first quarter of the sixth century. Within this range the bucchero cup (10) may possibly be more closely dated to the first quarter of the sixth century. A number of pieces may be earlier than this date range. The buccheroid impasto ?kantharos (21) is similar to pieces dated to the first half of the seventh century (e.g. from Cerveteri, Bosio and Pugnetti 1986, 35 Nos. 13, 15, 19). The decoration *a falsa cordicella* on the buccheroid impasto *oinochoe* (25) could also indicate an earlier date. The similarity of the fabric of the grey impasto bowl (38) to an example from Marsiliana may also suggest a date in the mid seventh century.

Composition of the group

Due to the circumstances of the finding of this material it is not possible to be certain that all originated from the same tomb, however the similar date range of the pieces suggests that they did. The collection seems to be only partial and cannot be taken to represent the full range of the original contents of the tomb. Generally the material is very similar to the contents of the tombs excavated in 1893 by Don Tommaso Corsini on Poggio Volpaio, published by Minto (1935, 19-24). The circumstances of the discovery of these tombs is not known (Minto 1935, 19) but they contained many complete vessels, more metal work and more painted vases than this collection indicating that the groups are more complete. It seems probable that metalwork, painted and complete vessels have been removed from this group, and the collection as it is represents those pieces which were broken or of no value to the tomb robber.

Most of this collection consists of table ware, the exceptions are the 3 coarseware jars. Of the remaining minimum of 48

vessels nearly half (23) are chalices or kantharoi and nearly a quarter bowls. The emphasis is clearly upon vessels for feasting, although aryballoi for unguents have probably been removed from the collection.

Discussion of the Magliano burials

The concentration of chamber tombs in this area is quite remarkable, their density in some areas nears that found in the urban necropolises of Southern Etruria. This concentration, along with the fact that the Roman colony of Heba lies within the area of the necropolises led Minto (1935) to conclude that the tombs represented the burial ground of an Etruscan urban centre which preceded the Roman colony. This notion can no longer be sustained as field survey revealed no traces of Etruscan settlement on the site of the colony and also discovered a large urban site at Doganella, some 5 km. to the south west. The possibility that the tombs around Magliano form part of the necropolises of Doganella should be considered. An obstacle to this interpretation is the distance of the tombs from the city. Most of the tombs lie between 4 and 6 km from Doganella and the hills around Magliano are visible from the city. However, in comparison to other urban centres the necropolises are too distant from the city to be considered as urban. In Etruria urban necropolises tend to lie within 2 km from the city. At Populonia and Vetulonia the necropolises are more dispersed but rarely occur at a distance of 5 km, and where they do this is the limit of a dispersed scatter rather than an isolated burial area. The limestone is the best local stone for cutting chamber tombs but it seems unlikely that it would have attracted burials from a city 5 km distant. The chronology of the necropolises also militates against this suggestion as all the tombs date to only the first century of occupation at Doganella.

Cristofani (1976, 250; 1981, 101-2) recognised this fact and suggested that the burial ground should be related to a series of small nucleated settlements (presumably villages) in the area. However, this hypothesis cannot now be sustained as the survey of the area found no such nucleated sites in the area of Magliano. Indeed few settlements were found in the area of the necropolises and neighbouring areas.

Kennet (1984) used different arguments to explain the density of tombs in this area. The two factors which he identified, local geology and tomb robbing are both unrelated to the original patterns of settlement and burial. The tombs are concentrated in a deposit of lacustrine limestone, the stone is soft and easy to excavate, but upon exposure to the air it forms a hard crust. In short the limestone is an ideal material for cutting chamber tombs. Kennet admits that the limestone may have attracted burials to a limited extent (1984, 33) but suggests that the concentration of tombs in the area is largely due to factors of preservation. He suggests that the chamber tombs have survived because they were cut into the rock and can be detected by archaeologists, elsewhere tombs were built on the surface and have been largely ploughed out by agricultural activity. He also asserts that the depredations of tomb robbers, active in the area of limestone, causes the tombs to be identified and so determines their known distribution. A further possible explanation for the distribution of tombs in the area is also raised by Kennet (1984, 33) suggesting that the distribution of the tombs is a relict of the original distribution of burials throughout the whole area of the Valley. He argues that only in the area of the limestone can the original pattern be discerned, elsewhere the detected pattern has been modified by post depositional events. This last suggestion does not now appear to be tenable as subsequent field survey has not recovered evidence in any area for ploughed out tombs with a density similar to that of the chamber tombs at Magliano.

Although the lacustrine limestone was ideal for cutting chamber tombs burials are also to be found in areas with different geology. Indeed looking at the lower valley as a whole the Magliano necropolises are part of a distribution of burials which clusters along a north west - south east axis on either side of the lowest ford of the Albegna at Marsiliana possibly related to the important route from Vulci to the south towards northern Etruria (Cristofani 1977, 250).

Consideration of the various factors conditioning the distribution of tombs does not advance the identification of the settlements of those who built the tombs. Survey results indicate that the tombs were not in a close spatial relationship to settlements either large or small. This observation suggests that rather than an isomorphic relationship between settlements and cemeteries the necropolises had a catchment area which extended some distance from the burial ground. An estimation of the size of the community burying at Magliano may help to define such an area using the same formula applied at Marsiliana above. In the necropolises 69 chambers have been identified, 24 scatters, and two graves. If it is assumed that each chamber contained 2 burials (which is probably a conservative estimate) and that each scatter represents a chamber the total of burials equates to 188. The maximum suggested date range for the cemetery is 650 to 525 giving a span of 125 years. With an average age at death of 20 the calculation yields a burying community of 30.08, and with an average age of 35 the result is 52.64. These figures must represent an absolute minimum for the necropolis as a whole as there are no doubt many more undiscovered tombs in the area. On this basis, if the users of the cemetery lived in scattered farmsteads of 4-6 adults a minimum of 5 and a maximum of 13 settlements would have been required to house this population. The density of such small settlements through the valley in this period is 0.33/km^2 indicating one site every 3 km^2 and that 15 to 39 km^2 of territory would have been occupied by the users of the cemetery. This catchment area may be represented as a circle of radius between 2.2 and 3.5km around the cemetery. These figures cannot be taken as absolutes, but they do put a scale to the size of the cemetery and indicate that a low density of rural settlement over a relatively small area could have produced the density of burials observed at Magliano if a common burial ground was used.

This reconstruction also indicates that the burying community at Magliano was more than twice the size of that at Marsiliana, suggesting that the size of community using the

same cemetery had grown between the seventh and the sixth centuries. Further indications of social change may be observed in the depositions at Magliano which are very different to all but the latest tombs at Marsiliana. At Magliano the burial place is communal, a chamber containing several depositions rather than a grave containing a single body. More emphasis is placed on the physical surroundings of the interment which take on domestic characteristics, the chambers form a room with a door and occasionally partitions and a window. Bodies were placed upon a bed constructed along the side of the tomb rather than laid at the bottom of a grave.

Although none of the tombs at Magliano have been recovered intact the form of the grave goods that accompanied the burial are different to the earlier burials at Marsiliana. It is impossible to comment upon the presence of precious metals, due to looting, but other items of less interest to the tomb robber may be discussed. No chariots or horse bits have been reported from the tombs, suggesting that this form of burial was not practised, also very few arms have been found. The grave goods typically include personal ornaments, ceramic storage vessels, serving vessels, bowls and chalices and perfume containers. Ceramic vessels form a far larger proportion of the grave goods in the chambers and compared to the graves at Marsiliana the range of forms is greater. Banqueting is still represented in the tombs at Magliano but the form of expression has changed from metal fire-dogs, candelabra etc. to the bucchero and impasto vessels suitable for such an occasion. The proportion of tomb groups containing banqueting equipment also seems to have grown: at Marsiliana it was confined to a restricted sub-group, but at Magliano all of the tomb groups contain some table ware. The quantities of pottery buried in the tomb also seems to have increased, the group from Poggio Volpaio, fragmentary as it was, contained at. least 51 vessels.

At Magliano the individual status of the deceased is not as clearly defined as in the burials at Marsiliana. With the exception of modest personal ornaments and occasional arms the grave goods relate to feasting and the associated use of perfumed oils. Therefore it is not possible to discern any strong hierarchy of status represented in the grave goods. Display of social status no longer seems to be as important in the burial rite. This more egalitarian rite is also reflected in the design of the chamber tombs, all of which are of similar size and design.

Saturnia

George Dennis visited Saturnia and likened the at tombs Pian di Palma to chambered cairns that he was familiar with from Britain.(Dennis1848, 275). Some of the tombs at Pian di Palma to the north west of Saturnia were excavated in a summary manner by Mancinelli at the end of the nineteenth century (Pasqui 1882, 57). This work formed the basis for a monograph published by Minto in 1925 on the city and tombs of Saturnia including some plans an representative grave groups (Minto 1925). More recently tombs at Puntone on the Pian di Palma have been reinvestigated and restored (Michelucci 1982, 53-70). Some of the finds now in Florence from the early excavations have also been published (Donati 1989) as have others now in Pula, Croatia (Mihovilic and Rendic-Miocevic 1988).

The published tombs of Saturnia may be divided into two; those to the north east of the city on the slopes of Poggio Pancotta which adjoins the hill of Saturnia; and those to the north west, across the River Albegna on the Pian di Palma, a travertine plain between the Albegna and the Fosso Butria. Each of these areas may be sub-divided into smaller necropolises. Survey work in the transect around Saturnia discovered traces of further tomb sites on the slopes around Saturnia which were also noted by Minto (1925, 625). Each of these different burial areas have distinct characteristics and will be described in approximate chronological order.

Sede di Carlo

Minto describes and illustrates 17 tombs excavated by Mancinelli in 1902 to the north of Saturnia at Sede di Carlo. These form part of a larger necropolis the limits of which were not determined. Three of these burials were cremations and the remainder inhumations. Cremations were placed in a pit cut into the rock with a circular base and rectangular walls, the walls were continued above the level of the rock in dry stone and the burial sealed with a slab of stone (Fig.4.3.14). In the two surviving tomb groups (tombs 4 and 5, Minto 1925, 631-3, Donati 1989) the ashes were contained in a late Villanovan style biconical urn with an unusual spherical lid only paralleled at Vulci and Chiusi. The other grave goods from tomb 5 consisted of a bronze fibula, an iron spear head, 4 impasto jars, nine impasto bowls, an impasto cup and a cup of fine ware.

Inhumations were laid in an east - west rock cut grave which was sometimes lined and sealed with slabs of travertine. Two of the tombs had exceptional coverings, triangular tympana at either end with a notch at the apex for a wooden beam to support two slabs of travertine forming a pitched roof over the grave. The covering produced a house like sarcophagus (Fig. 4.3.15; Minto 1925, fig. 27). Some of the burials preserved traces of tumuli. Grave goods in the inhumations were similar to the cremations. Examples given by Minto comprised: 1) a necklace of amber and glass paste, 2 bronze fibulae, a bronze hair spiral, a spindle whorl, coarseware large jars and 2 jars, 5 bowls and a cup of impasto, 2) 3 bronze fibulae, a coarseware large jar, jar and 3 cups, 4 depurated cups with Italo-geometric painted decoration.

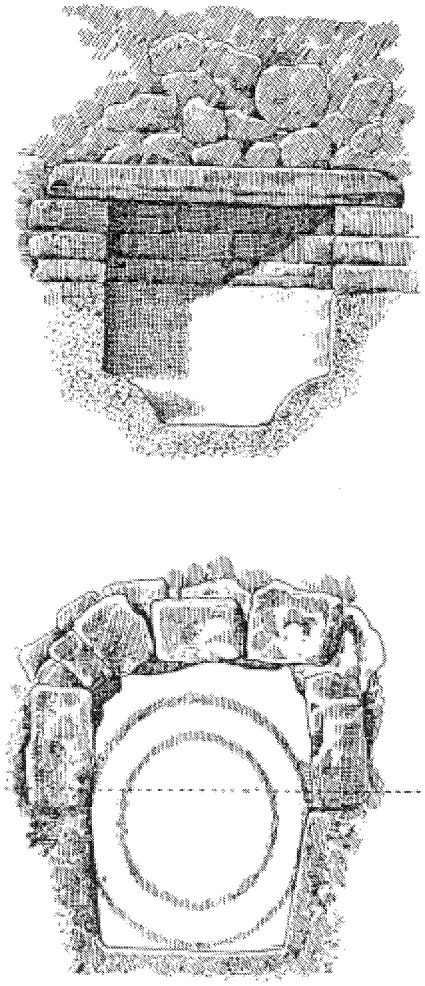


Fig. 4.3.14 Sede di Carlo: section and plan of cremation 5 (Minto 1925, Fig.24)

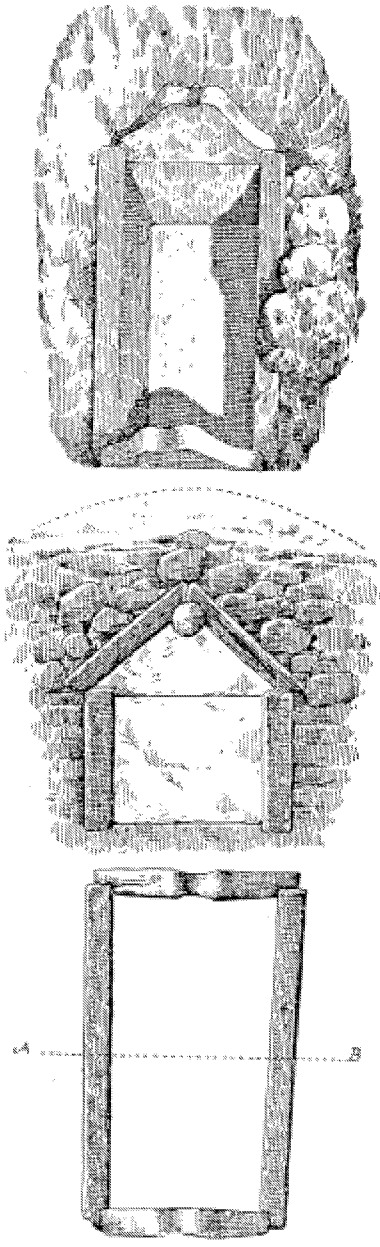


Fig. 4.3.15 Sede di Carlo: view, section and plan of grave 9 (Minto 1925, Fig.27)

The grave goods date the cemetery to the early seventh century, and the biconical urns suggest that the cremations are earlier than the inhumations. Similarities with Marsiliana only extend as far as the use of cremation in pits and inhumation in graves with or without a tumulus. Personal ornaments are few and vessels confined to jars, bowls and cups. None of the hierarchy or status differentiation of Marsiliana is apparent in the admittedly small sample of burials.

Pancotta

In 1899 Mancinelli discovered a number of tombs on Poggio Pancotta, but when Minto published details of the discovery no traces remained. The tomb which Minto describes is of a particular type called '*a camera seminfossata*' by Mancinelli to indicate that the floor of the chamber was excavated into the bed rock. The walls of the chamber were constructed of slabs of rock and the dromos of dry stone, the type is common elsewhere in the valley. A slab of stone orthogonal to the dromos divided the chamber into two parts (Minto 1925, 642, Fig.29). Although the tomb had been plundered bronze jewellery, personal ornaments and arms were found along with iron arms, fire dogs and chariot wheels, reticulate jars, impasto jars, bowls and cups and Italo-geometric vases. This range of items recalls those found in some of the graves at Marsiliana - the banqueting equipment and chariot, although precious items are lacking. Precise dating of this tomb is difficult, a belt buckle (cf. Donati and Michelucci 1981, 133 No. 277) and the pottery generally indicate a date in the seventh century, but the reticulate jars, some decoration a '*falsa cordicella*' and the lack of bucchero suggest a date towards the middle of the century.

Pratogrande

Four Tombs were excavated in 1901 by Mancinelli at Pratogrande on the north bank of the Albegna. Minto publishes one of these tombs stating that the others were similar (Minto 1925, 664-74, Figs. 39-42). The slab construction with a sunken floor was similar to that at Pancotta, but instead of a partition the chamber had a central pillar of rock. Above the tomb was a 6m. diameter tumulus delimited with a circle of stones. A wide variety of grave goods were found in the tomb: silver jewellery, bronze fibulae, personal ornaments, toilet articles and vessels, iron arms, a fire dog, skewers and sandals; ceramics included storage jars, spindle whorls, bucchero, Corinthian wares and Attic red figure. Clearly the tomb contained multiple male and female depositions made over a long period of time. The impasto may be as early as the mid seventh century and the red figure as late as the early fifth. Potentially the tomb was in use for some two hundred years. This time span overlaps with the cemeteries at Marsiliana and Magliano as does the range and types of grave goods.

Campo delle Caldane

An indeterminate number of tumuli were excavated in 1899 at Campo delle Caldane by Mancinelli (Minto 1925, 674-85, Figs. 43-7). The construction of the tombs is different to those at Pancotta and Pratogrande. Chambers were built of slabs of stone directly upon the bedrock, and the large tumuli (14-16m. Diameter) were also carefully constructed of slabs of stone. The plans of the tombs were also more complex. Both tombs published by Minto had a trapezoidal forecourt cut into the tumulus, the first had a short dromos, a square vestibule and a rectangular main chamber (Fig. 4.3.16); the second no dromos but a square vestibule, a rectangular central chamber and square inner chamber with a longitudinal partition.

Minto lists the finds from the first of these tombs (1925, 678-85): a gold necklace, a silver ring, semi-precious stones, various small bronze items, coarsewares, an Etruscan transport amphora, impasto, bucchero and Attic black and red figure. Dating of these articles ranges from perhaps the late seventh to the fifth centuries. The variety and range is similar to Pratogrande.

Mancinelli also discovered numerous rock cut subterranean chamber tombs in the Campo delle Caldane, details are scanty but most seem to have had single chambers and were grouped, including 5 in a circle with 4-8m. between and 2 tombs in the centre (Minto 1925, 685-92, Figs. 50-1). Minto publishes the grave goods from one of these which had two chambers and a long, steep dromos: a glass paste pin head, a bone handle, various small bronze objects, coarsewares, bucchero (some with relief decoration) and Etruscan black figure. These finds would seem to date from the sixth to the fifth centuries.

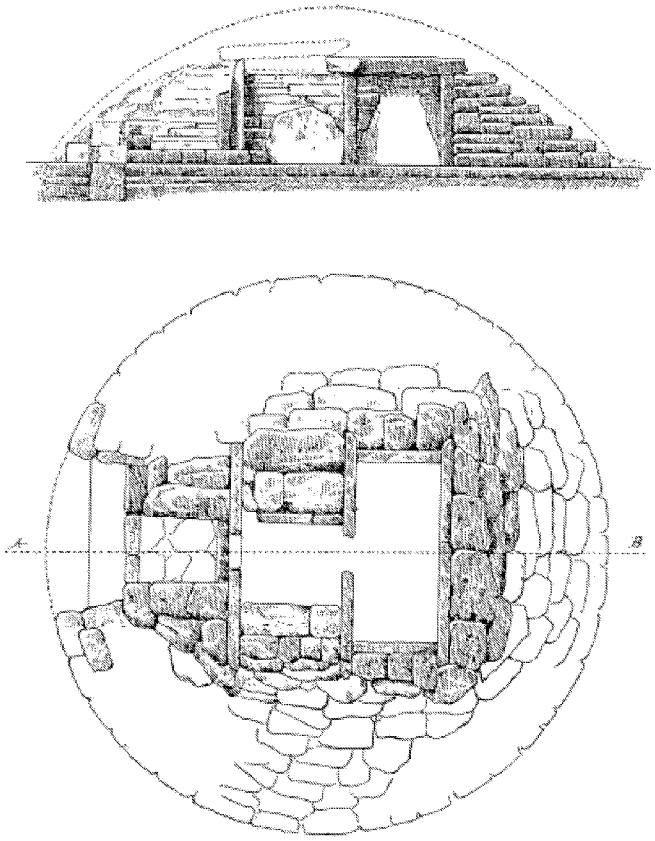


Fig. 4.3.16 Campo delle Caldane: section and plan of tumulus 4 (Minto 1925, Fig.46).

Puntone

Puntone lies at the south western extremity of the Pian di Palma on the north bank of the Albegna. This area was investigated by Mancinelli but no record remains of his finds. Between 1979 and 1981 seven chamber tombs and a rock cut grave were excavated by Michelucci. Details of two of these were published following an exhibition in Pitigliano (Michelucci 1982, 52-70). As at Campo dell Caldane the tombs were constructed of slabs of travertine set on the surface of the bed rock. Both had carefully constructed tumuli *c.* 6m. in diameter. Both had a long dromos and a single square chamber, tomb A had a partition and B a central pillar of travertine. The fragmentary grave goods consisted of Etrusco-corinthian wares, Attic black figure, 'Ionic' ware, impasto and bucchero. The finds have been dated between the early seventh and the mid fifth centuries, a long period of use of perhaps 225 years.

Sterpeti

To the north east of Saturnia at Sterpeti Mancinelli excavated a number of tombs in 1901. Most of these were chamber tombs, but one was a rock cut grave. It is unusual because of the late date of the grave goods which included a bucchero kyathos (Rasmussen type 4b), a bucchero pesante relief jar and an Attic black figure mastoid cup (Minto 1925, 644-6). This collection provides a date in the late sixth or early fifth centuries, some hundred years after simple grave burials had apparently disappeared from the valley.

One of the groups of chamber tombs consisted of a row of 6, each with a long dromos and a single chamber with a bench running around three sides. One of these had loculi to the sides of the dromos and another a small vestibule at the end of the dromos. Minto lists the contents of one of these which include: beads of gold, glass paste and amber, bone objects, coarseware, bucchero, Etrusco-corinthian, Attic black and red figure, Etruscan black figure (including a vase by a follower of the Micali painter (Spivey 1987, 37)) and black gloss wares (Minto 1925, 646-56). Such a wide range of finds indicates multiple depositions between the latter part of the sixth century and the early third century, a period of perhaps 250 years.

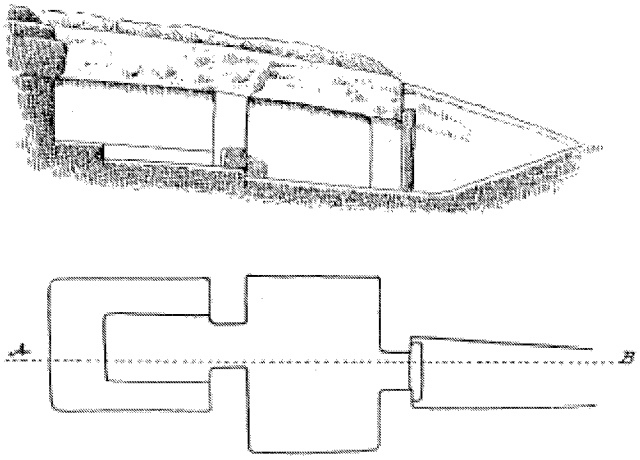


Fig. 4.3.17 Sterpeti: section and plan of chamber tomb 3 (Minto 1925, Fig.35).

Further chamber tombs were also discovered nearby, one is described by Minto (1925, 656-61). A long dromos led to two rectangular chambers, the innermost had benches on three sides (Fig. 4.3.17). Finds included 4 *cippi* (see below), bone objects, a bronze mirror, a strigil, 2 fibulae and fragments of vessels, iron objects, fine ware, black and grey bucchero and local and imported black gloss wares. These date between the fifth and the third centuries. This collection is the most recent grave group published from Saturnia.

Porta Romana

Between the Porta Romana and the Porta di Fontebuia Pasqui (1882, 57) and Dennis (1878, 275) describe two rock cut façades of tombs. Minto illustrates one of these (1925, Fig 38). The façades were cut into the cliff face in the shape of a door with, what were taken to be graves cut into the rock above the façades, however, is seems more likely that these are in fact slots for placing *cippi* above the façades, forming what has recently been identified as tomb façades which function as *araportacippi*, translatable as altar-*cippi*-holders (Maggiani, A. 1985b, 87).

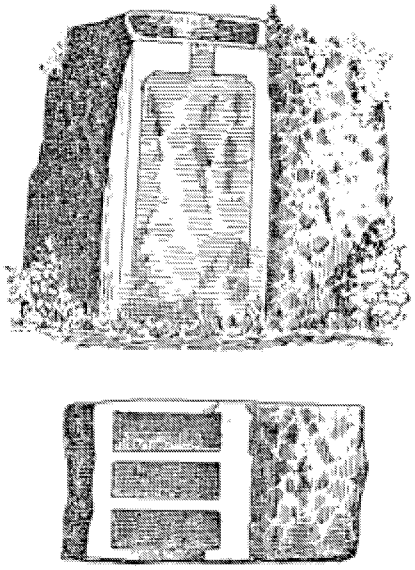


Fig. 4.3.18 Porta Romana: elevation and plan of façade tomb (Minto 1925, Fig.38)

Table 4.3.11 Summary of tombs discovered by field survey

Survey No.	Type	Bibliography	Notes
MAN107.2	House/tomb		
MAN108.0	Tomb		Stele
MAN110.2	House/tomb		
MAN118.2	House/tomb		
MAN121.2	House/tomb		
MAN258.0	Necropolis		
MAN263.0	House/tomb		
MAN302.2	House/tomb		
MAN303.0	Tomb		
SAM3.3	House/tomb		
SAM4.0	Necropolis		
SAM6.2	Necropolis	Minto 1925, 630-661	Sterpeti and Sede di Carlo
SAM31.3	House/tomb		
SAM46.2	Necropolis	Minto 1925, 664-674	4 Tumuli at Pratogrande
SAM48.2	House/tomb		
SAM51.3	House/tomb		
SAM52.1	Necropolis	Michelucci 1982	Necropolis del Puntone
SAM52.2	Necropolis	Minto 1925, 674-662	Campo delle Caldane
	Tombs	Minto 1925, 662-664	Porta Romana

Survey sites

Survey sites discovered around Saturnia other than the standing tombs at Puntone were surface scatters. Many of these were classified a house/tomb sites. Date ranges for these sites, derived from the pottery, parallels that of the published tombs: SAM 51.3 dates to the seventh to sixth centuries, MAN 110.2 yielded archaic material, MAN108.0 dates from the late seventh to the early third and SAM48.2 from the fourth to the early third. An exceptional find was made at MAN108.0, an inscribed stone with a boustrophedon funeral memorial text, indicating an archaic date, the inscription is being studied by Michelucci but unfortunately no details are presently available.

Discussion

The tombs around Saturnia published by Minto provide a remarkable chronological sequence stretching from the early seventh century to the early third unparalleled elsewhere in the valley. Earliest burials are cremations at Sede di Carlo; this rite is replaced with inhumation under a tumulus in the first half of the seventh century. The first inhumations were in rock cut graves and this practice is still attested *c.*500 by one burial. Constructed single chamber tombs with a tumulus were also introduced at Puntone around about the same time, and by the second half of the seventh century more elaborate three chambered tombs were being built at Campo delle Caldane. These tombs continued in use until the mid fifth century, but during the sixth century subterranean chambers became common. These continued in use until the early third century.

Such a sequence of development from cremation to grave to chamber is chronologically in step with the general development of burial practice in Etruria, however the chamber tomb does seem to have been adopted at Saturnia earlier than at Marsiliana. The method of construction of the chambers was conditioned by the local geology. The travertine of the Pian di Palma is laminar and so readily suitable for use as the walls, partitions, doors and ceilings of chamber tombs. Similarly the subterranean chambers also utilised the rock but in this case the dromos was cut through the surface layer of hard travertine and the chamber was excavated in the softer rock below. Individual chamber tombs of all types were used for long periods - over two hundred years, perhaps seven or eight generations. This indicates a high degree of population continuity, and contrasts with the chambers at Magliano which were used for 125 years at the most. Such long, communal use causes problems in discerning chronological development in grave goods, but various changes can be outlined. The earliest burials contained personal ornaments of bronze, arms, spindle whorls and ceramics - jars bowls and cups. Constructed chamber tombs, the next in sequence, contained in addition precious metal jewellery, banqueting equipment and fine and imported pottery; one also contained a chariot. The latest chamber tombs held a similar range but arms have not been reported. This sequence parallels the changes apparent in the contrasting of the Marsiliana and Magliano cemeteries. Although the Saturnia burials are by no means as rich as the Marsiliana inhumations the constructed chamber tombs provide evidence of social differentiation using similar representations of the social persona of the deceased in the use of burial with a chariot, metal banqueting equipment, arms and spindle whorls. Variations in the size and complexity of the tomb structures also suggest stratification within society - at least at the time the tombs were constructed.

Within the subterranean chamber tombs long use has obscured differences in the grave goods. The general uniformity of the plans of the tombs invites comparison with the Magliano necropolises and may indicate a decrease in social differentiation. Arms have not been recovered from these tombs indicating that military activity was no longer signified in burial, a change which once again is observable at Magliano. Compared to other burials in the valley figured vases of various types seem to be more common at Saturnia. This difference may be more apparent than real as the Saturnia group are the only burials representative of the fifth century and the grave goods seem to be less disturbed than elsewhere.

Unfortunately it is not possible to reconstruct the size of the burying population at Saturnia due to the fact that the cemeteries are less well documented than Marsiliana and Magliano and the long period of use of each chamber tombs makes the estimation of the number of individuals interred too approximate to be useful.

Chapter 5. Subsistence and agriculture

The study of subsistence has not been a central theme of Etruscology. An exhibition in Viterbo, organised to mark World Food Day on the 16th October 1987, provided an overview of current approaches to the issue. The catalogue (Barbieri 1987) is a rich menu of polemic (Barker 1987), textual exegesis (Cristofani 1987; Moscati 1987), palaeobotanical case studies (e.g. Costantini *et al.* 1987), studies of material culture (Scheffer 1987) and art history (Barbieri 1987b). Many different approaches are illustrated, but there seems to be exceedingly little co-ordination between the courses of research, nevertheless the catalogue forms a useful *hors d'oeuvre.*

Ampolo (1987) sums up the problems with textual sources and bravely tries to salvage something edible from the ashes. The largest obstacle is that ancient sources are irrelevant to the problem, all date from later times, products of a very different agricultural regime, and are anachronistic if applied wholesale to an Etruscan situation. Tales of obese Etruscans are hardly relevant (Ampolo 1987, 10) and a list of supplies sent to help Scipio in Africa in 204 BC, (Moscati 1987) reads like Livy's shopping list (Livy 28,45), and one of the most extensive accounts of Etruscan agriculture is largely a retrojection of Roman sources from Cato to Rutilius Numatianus (Heurgon 1964, 97-134). These sources are precious, but they can do no more than provide instances of Romans reporting their distant past, they cannot alone reconstruct systems of food production that developed over six centuries in Etruria.

Art historical approaches draw upon the very few examples of illustrations of food preparation which have survived from the Etruscan period (Barbieri 1987b; Blanck 1987). These are augmented by more common scenes of banqueting in the Orientalizing and Archaic period (Cristofani 1987b). The themes are fascinating but the sources are representations, projecting a vision of feasting rather than the realities. Furthermore, all of the evidence comes from tombs, most contain mythic elements and all are projecting the status of those for whose benefit the artefacts were buried rather than describing subsistence strategies (Morris 1987, 29-43; 1992, 1-30, Fig.23).

Studies of the material culture associated with food are also illuminating whether they be studies of the hardware – pots and pans (Blanck 1987), the appliances – stoves and ovens (Scheffer 1987) or the wrappers – amphorae (e.g. Rizzo1990). Each provides more evidence for food preparation and redistribution, but not for food production. To date, Etruscan farm tools have received little attention, some were displayed in the Viterbo exhibition (Barbieri 1987, 143-5), but unfortunately such tools were not usually deposited in tombs and so few are known from the Etruscan world. However, many of those that are known come from votive deposits. The best known of these, a hoard of miniature tools in bronze from the Hellenistic period, comes from Talamonaccio in the survey area (Michelucci 1985a).

The fundamental contribution which field survey, palaeoenvironmental studies, archaeozoology and archaeobotany can make to the study of Etruscan subsistence is outlined by Barker (1987). Other contributors to the catalogue recognise this potential and look forward to the results of the application of these techniques (Ampolo 1987, 12; Cristofani 1987, 40). One of the strengths of field survey is the opportunity it provides to map rural settlements in both their diversity and distribution (e.g. Keller and Rupp 1983; Macready and Thompson 1985). This provides the possibility of extending the discussion of subsistence strategy from the single site to the settlement pattern as a whole and the consideration of changes through time at a regional scale. Study of plant and animal remains preserved at archaeological sites provides the most direct form of evidence for ancient subsistence strategies, but the techniques required to both gather and analyse the evidence have rarely been applied to Etruscan period sites (Barker 1987). This situation is compounded by the fact that excavations of the Etruscan period have not generally concentrated upon settlement sites, other than monumental quarters of cities or minor centres, not perhaps the best areas for recovering domestic refuse. Scholars of the central Italian Bronze Age are more fortunate in this respect since evidence is available from a wide range of sites from different environments and in exceptional cases such as Narce chronological sequences of assemblages are available (Barker 1976). Indeed, the rich Bronze Age evidence tends to form a long preamble to short discussions of Etruscan animal and crop husbandry (e.g. Barker 1987), simply because it forms a solid point of departure for discussion of major changes in the Etruscan period for which there is currently a shortage of firm evidence. However, archaeozoologists and botanists are keen to be cautious, and the emergent nature of the study is apparent when it is not possible to draw comparisons between studies made at different sites or by scholars from different schools of education (McVicar *et al.* 1994).

Barker tacitly acknowledges the fact that field survey needs to be amplified by excavation by concluding his essay on Etruscan agriculture with a mention of the excavation at Podere Tartuchino which forms a part of the Albegna Valley/Ager Cosanus Survey (Barker 1987, 27-8). The excavation, the first ever undertaken and published of an Etruscan rural site (Attolini and Perkins 1992), is important for two reasons, firstly it provides an in depth study of the economy of one of the dots on the maps produced by the survey and secondly it directly addresses the problem of articulating the development of Etruscan agriculture. The intention was to identify and excavate a 'typical' surface scatter of the Etruscan period and use it as an example of what might lie below other scatters in the valley, and so be able to generalise from the one site to at least the remainder of the upper valley, if not beyond.

Within the excavation the most remarkable find was the remains of what is probably the earliest wine press yet discovered in Italy in the largest room in the farm building[18].

[18]The following discussion is adapted from Attolini and Perkins 1991, 120-23.

The centre of the room was occupied by a sunken *pithos*. The function of the *pithos* was not immediately apparent. However, evidence from Roman agronomists[19], representations of the vintage on Attic black figure vases, ethnographic studies, lipid analysis and graffiti all combine to indicate that the pithos was probably used to make wine. Hundreds of carbonised grape pips recovered from samples taken in the room may also support this conclusion (Attolini and Perkins 1991, 120-23).

Of course it is not necessary to assume that the *pithos* had only a single function, but if it was used for purposes other than wine making, such as grain or water storage, washing textiles or cheese making, care would have had to be taken not to cause contamination of any wine. The *pithos* only certainly dates to phase II of the farm, although it may also have been there during phase I, and was physically too large to have been carried into the room through the door. This suggests either that parts of walls were demolished to install it or that it was actually put in place before the house was built. If the latter were the case it suggests that the *pithos*, or wine press, was an integral part of the farm, and that the house was literally built around the wine press.

The excavation did provide evidence for several forms of agricultural production at the farm which dates principally to the fifth and fourth centuries[20]. In the samples only one species of cereal, emmer wheat (*Triticum dicoccum*), was found, but this is not evidence that other grains such as einkorn, bread wheat, millet, oats and barley were not also grown as they are found in Bronze age contexts from similar locations for example at Gubbio (McVicar *et al.* 1994). Emmer wheat was widely distributed and common in the Etruscan period (Costantini and Costantini Biasini 1989, 61), and formed a staple. Legumes were not found in the samples, but may well have been grown as they are attested elsewhere (e.g. Gran Carro, Costantini *et al.*, 1987: 63). There is then, if the weeds are also taken into account, limited evidence for arable cultivation at Tartuchino. There is more evidence for the cultivation of the vine, although the 66% of the plant remains that were of *vitis vinifera* (domesticated vine) cannot be taken to indicate that viticulture was dominant. Similarly, the one fragment of *olea europea* (domesticated olive) indicates that olives were probably grown at Tartuchino, although the possibility that they were transported to the site cannot be ruled out since they have been found in amphorae (Bound 1991, 208-9). The plant remains testify to the cultivation of cereals, vines and olives, the three components of Mediterranean polyculture. Some implications of this conclusion can be investigated by a consideration of the subsistence requirements of the farm at Tartuchino compared to its productive capacity and its position in the settlement hierarchy.

The major advantage of polyculture is that, with appropriate rotations, it enables several crops to be produced from a single plot of land in one season, and so becomes important if land is scarce or intensive production is required. Demand for agricultural produce cannot be estimated directly, but the later sixth century was a time of rapid population growth suggesting that production would have to be maximised.

The scale of production the farm has been estimated to have been perfectly capable of producing a surplus over the requirements of 4 to 6 people if the lands of the farm are reconstructed with an area of vines and grain, an area of olives and grain, an area devoted to grain in rotation with fallow or possibly legumes, and further areas of pasture and woodland. This was not the most intensive possible use of the land. The grain fields could also have been planted with vines to increase wine production. The conclusion must be that although polyculture may have been practised, it was not necessary to enable subsistence and some surplus for exchange at Tartuchino, and that arboriculture remained in a balance with systems of grain and fallow rotation (Sereni 1970, 115-8). In these circumstances perhaps the only advantages which polyculture has to offer are that it creates a more compact farm, with reduced internal travelling and transport, and allows a more intensive use of the most fertile soils (Attolini and Perkins 1992, 126-30).

The excavation of one of the survey 'house' sites has provided evidence for a complex agricultural system at Tartuchino. Unfortunately, animal bones were not preserved at the site, but it is reasonable to assume that a range of cattle, pigs, sheep and goats were kept at the farm, as they are the most common animals in all other Etruscan bone assemblages. At Montecatino north of the Arno, pigs seem to have been exploited for their meat, either as piglets (under 1 year old, 30%) or as older animals when they have reached optimum size for meat production (2-3½ years, 50%) (Ciampoltrini *et al.* 1989-90). Similar use of pork has been found at other sites where Etruscan pig bones have been aged, for example at Roselle (Corridi 1987-8) and Cerveteri (Clark 1987-8). At the same sites domestic cattle tend to be older at death, suggesting they were used for traction and for milk, before their meat was utilised. Sheep/goats seem to have been used to the full as well, since mature adults are most common in the bone assemblages, suggesting they were used for wool and milk before slaughter. Other domestic animals which are found in Etruscan contexts are horses, dogs (in one case with butchery marks, Ciampoltrini *et al.* 1989-90, 277) and chickens at Populonia (Ciampoltrini *et al.* 1989-90; Clark 1987-8; Corridi 1987-8; Costantini *et al.* 1987; Gejvall 1982; Mazzorin 1987; Sorrentino 1981a and b). Future studies can only add depth to this sketchy picture, but the collections of animal bone studied to date all seem to indicate that livestock farming was a mixed activity and that cattle, pigs and sheep were all kept without particular specialisation. Farm animals were exploited to the full in a mixed farming system where pastoral and agricultural activity were practised together in the same locations. To date no assemblage has been identified that might indicate that semi-pastoralist societies functioned in Etruria as they had in the Bronze Age (Puglisi 1959; Barker 1972). However, it would seem highly likely that if transhumance was practised between the high pastures around Monte Labbro and Monte

[19] Cato 10; 69; Columella 12.52; Varro 3.2.8.

[20] The following discussion is adapted from Attolini and Perkins 1991, 126-30

Amiata at the head of the valley and the winter pasture that may have existed in the coastal areas it was fully integrated with mixed agricultural societies.

Wild animals have also been identified in Etruscan contexts, at Montecatino their bones formed 6.38% of the assemblage and the fox, red and roe deer, badger, hare and boar are all represented. These animals, particularly the deer and the boar are found in other assemblages and the tortoise has also been found at San Giovenale and Populonia (Ciampoltrini *et al.* 1989-90; Mazzorin 1987; Sorrentino 1981 a and b). These species indicate a mixed landscape of woodlands, fields and open country.

Seafood has also been identified at coastal sites but only in small quantities and there has been no systematic study (Colonna 1987; Mazzorin 1987).

Without an animal bone assemblage from Tartuchino there is only partial evidence for the system of farming in use, however the plant remains have revealed evidence for the staples of grain and olives, yet the most spectacular evidence would seem to be for the production of wine which is not a staple, rather an exchangeable surplus. The evidence from Tartuchino illustrates a farming system which contrasts with that which has been identified in the Bronze Age (e.g. Potter 1976; 1979, 36-51; Ostenberg 1967). The clearest contrast is that in addition to various grains, the olive and the vine are also in full cultivation by the end of the sixth century when Tartuchino is founded.

It is generally believed that the cultivation of the grape and olive, and therefore polyculture, became widespread during the seventh century (e.g. Barker 1987, 28; 1988, 781-3; Bartoloni 1989,188-9), although the evidence is not yet clear cut. Olive stones and grape pips are known from the Bronze Age of Italy but they are not thought to form part of a widespread system of agriculture (Barker 1987). The chronology and geographic distribution of the adoption of olive and vine cultivation in Italy is not yet precise. However, evidence from Tartuchino suggests that by the end of the sixth century cultivation of grain, olives and vines was commonplace in Etruria. Furthermore, the most distinctive tool of arboriculture, the pruning hook (*roncola* or *pennato*) had assumed its canonical form in areas marginal to central Italy, such as Villanovan Bologna, as early as the eighth century (d'Agostino *et al.* 1985, 73-5, 2.8.3.17). This suggests arboriculture became diffuse at an earlier date than the relatively scarce archaeobotanical evidence presently suggests.

Chapter 6 The finds

6.1 Summary of the finds

6.1.1 Metalwork

The only evidence for metal working discovered by the survey was found in the city at Doganella (Perkins and Walker 1990, 50-52, 70-71). However evidence of metalworking has also been found in excavations at the minor centre at Ghiaccioforte in the middle valley (Rendini1985, 131-2). This would seem to indicate that metalworking was an urban activity. No firm evidence has emerged for metal workshops in the survey area from studies of finds from tombs, suggesting that for the rural population exchange, either with the local or external centres, was probably the source of metal goods.

6.1.2 Etruscan pottery studies and the place of this study

The fact that the urban centres, temples and tombs have received the most archaeological attention has had a strong influence on the study of Etruscan artefacts. Most of the Etruscan finds in the museums of the world have been found in tombs. Many of the pieces were acquired when controlled excavations were rare. The business of opening tombs in the 19th century is vividly described by George Dennis:

> 'This is generally a process requiring great care and tenderness, little of which, however, was here used, for it was seen by the first objects brought to light that nothing of value was to be expected - *hoc miserae plebi stabat sepulchrum.* Coarse pottery of unfigured, unvarnished ware, and a variety of small vases in black clay, were its only produce; and as they drew them forth, the labourers crushed them beneath their feet as things 'cheaper than seaweed'. In vain we pleaded to save some from destruction; they were *roba di sciocchezza* – 'foolish stuff' - the *capo* was inexorable; his orders were to destroy immediately whatever was of no pecuniary value, and he could not allow us to carry away one of these relics which he so despised.'
> (Dennis 1878, 450)

This case was not isolated and much evidence has been destroyed. Attitudes have now changed, but on the whole it is the Greek wares, figured wares and fine wares from Etruscan contexts which have received the most scholarly attention and so are best understood.

In the past thirty years, with the increase in settlement archaeology, there has been a growing interest in everyday domestic Etruscan pottery but the study is still only beginning. Now there are a number of studies of pottery from individual sites from various parts of Etruria, for example Veii (Murray Threipland 1963; Murray Threipland and Torelli 1970), the Tolfa mountains (Zifferero 1980), Pyrgi (Pyrgi 1970), Murlo (Bouloumié 1972; Bouloumié Marique 1978), The Val d´Elsa (De Marinis 1977) or the Agro Fiorentino (Capecci 1987). These studies, and others do not yet provide enough information for a detailed account of the chronological development or spatial distribution of different types of coarse wares.

Up until now no collections of Etruscan coarsewares from field survey have been published. The material from the South Etruria Survey has yet not been studied in detail (although work is under way) and other survey work is too recent to have been published. This present study, along with the pottery from the city at Doganella in the lower Albegna Valley (Perkins and Walker 1990) and the farm at Podere Tartuchino (Attolini and Perkins 1992), forms the first publication of Etruscan pottery collected in a regional survey. Similar comprehensive studies of ceramics from other surveyed areas will in the future lead to a fuller understanding of Etruscan pottery. The study of ceramics from survey evidence is important because it allows a consideration of material culture at a regional scale rather than as an assemblage from a single site. Evidence from the pottery studies also feeds back into the evidence of the landscape archaeology and is particularly important in reconstructing economic activity at individual sites and in the region as a whole.

The first part of this chapter is an account of the methodology used to study the ceramics presented here. This is followed by a summary of the assemblage. The detailed catalogue of the survey finds follows and is extended by a catalogue of a tomb group recovered during the survey.

6.1.3 Methodology of the pottery study

This study presents some of the results of 18 years of research in the Albegna Valley/Ager Cosanus region of Tuscany, Italy. Thousands of artefacts have been collected and hundreds of sites recorded during this period. This study concentrates upon the ceramics dating to the Etruscan period (8th-3rd century BC). The publication of the ceramics from the survey of the city at Doganella (Perkins and Walker 1990), the excavation of the farm at Podere Tartuchino (Attolini and Perkins 1992) and the present study of evidence collected by systematic regional survey now form one of the most extensive detailed studies of Etruscan ceramics from settlements that has been made. Collections from individual sites have been published in the past but the Albegna Valley/Ager Cosanus is the first part of Etruria where the Etruscan ceramics from regional investigation have been fully studied and published.

The methodology of the study of the ceramics from the survey is discussed in the pottery report from Doganella (Perkins and Walker 1990, 24-41) and the same methodology was followed for this study.). The same typology and classification has similarly been used, extended as necessary to accommodate the additional variation encountered in the survey area.

The pottery was first sorted into obvious groups, coarsewares of distinctive types, fine ware, bucchero, black gloss etc. Each of these groups was then studied in detail. A fresh break was made in each sherd and examined at X10 magnification. On this basis each sherd was assigned to a fabric group. The nature of these groups varied considerably. Some were obvious and could be identified by distinctive mineral inclusions or clay colours, for example. Others, particularly the commonest coarsewares, were less sharply definable, and

their integrity depends upon a range of shared inclusions, the size and quantity of which could be extremely variable.

A series of sherds which represented the range of variation within each group was then re-examined, and a standard recording form was compiled to produce a synthetic description of each fabric group. These are the basis of the descriptions presented below. These sherds were then put aside for constant reference when assigning fabric types to further sherds: The fabric samples are currently kept at the University of Siena.

The following information was recorded for each fabric. A reference number for each fabric, the sites where the fabric was identified, reference numbers for each vessel type in that fabric group and a sherd count. The colour of the fabric was recorded both verbally and by reference to the Munsell colour system. A series of physical observations were taken; the hardness - how easy was it to crush the fabric to dust; the feel of the surface of the pot; its resistance to abrasion by a finger nail; and its strength - how easy it was to break a corner with pincers. All of these criteria are very subjective and were described as high, medium or low, consequently they can only be used for comparison between the different fabrics. A fresh fracture was described as conchoidal, finely irregular, smooth, rough or hackly, with an observation of any lamination. These observations provide information as to the clay preparation, forming and firing conditions. The second part of the form was a description of the clay matrix, mineral inclusions and any voids or impressions visible at X10 magnification. The inclusion was described, for example 'black crystal' or 'white particle' etc. and then identified, if possible. The size range was recorded and an approximation made of the frequency of each inclusion, and the level of sorting of the inclusion was noted, either well or ill sorted. Finally, the shape of the inclusion was described, from angular through to round.

Once the fabrics were established, the sherds within each group were divided according to the forms of the vessels, jars, bowls, basins, amphorae etc. Each sherd was then catalogued and a repertoire of types was established for each form, each sherd was either drawn or cross-referenced to an identical sherd already drawn. Precedence was given to precise morphology rather than size. Rim and base diameters were also recorded, along with any decoration or surface treatments.

For the purposes of publication synthetic types within each form have been established whereby the original illustrations have been grouped into numbered types when similar enough to be considered variations upon a theme. Each ware has a separate type series except for the numbered coarse wares which share a type series. References to similar pieces from other sites have been limited to well published and stratified groups. The parallels cited do not claim to be exhaustive, given the disparate nature of Etruscan pottery studies, but wherever possible reference has been made to a work which does contain extensive recent bibliographies. Similarly, where possible, reference has been made to readily available published drawings in preference to repetitive illustrations. The pottery can be referred to in the following manner, fabric, form and type, e.g. coarseware 1 bowl type 1.

6.1.4 Summary of the ceramic assemblage

Table 6.1.1 Fine wares

Fabric	*No. of Sherds*	*%*
Bucchero	34	3.85%
Buccheroid impasto	37	4.19%
Grey Bucchero	27	3.05%
Fine Cream ware	786	88.91%
Total	884 Sherds	

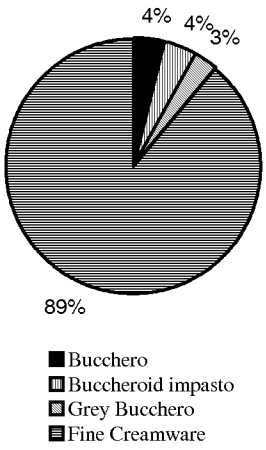


Fig. 6.1.1 Fine wares

Fine cream ware is by far the most common fine ware, however its preponderance is exaggerated by its high visibility in the field: it is white and bucchero is black.

Table 6.1.2 Coarsewares

Fabric	*No. of Sherds*	*%*
Impasto	547	8.68%
Coarseware 1	4619	73.33%
Coarseware 2	326	5.18%
Coarse cream ware 1	108	1.71%
Coarse cream ware 2	498	7.91%
Coarseware 3	3	0.05%
Coarseware 4	4	0.06%
Coarse cream ware 3	11	0.17%
Coarseware 6	28	0.44%
Coarseware 7	25	0.40%
Coarseware 8	1	0.02%
Coarseware 9	18	0.29%
Coarseware 10	6	0.10%
Coarseware 11	5	0.08%
Coarseware 12	6	0.10%
Coarseware 13	16	0.25%
Coarseware 14	33	0.52%
Coarseware 15	19	0.30%
Coarseware 16	3	0.05%
Coarseware 17	1	0.02%
Coarseware 18	22	0.35%
Total	6299 Sherds	

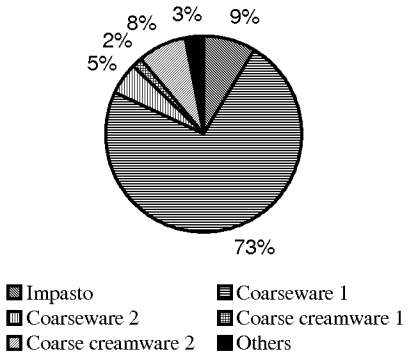


Fig.6.1.2 Coarsewares

Coarseware 1 is by far the most common fabric forming 73 % of the total. 10% of the assemblage is coarse cream ware and a further 5% is coarseware produced at Doganella (Coarseware 2). Early impasto forms 9% of the total.

Table 6.1.3 Amphorae

Fabric	*No. of Sherds*	*%*
Doganella fabric	208	45.51%
Coarseware 1	35	7.66%
Coarse cream ware 1	27	5.91%
Coarse cream ware 2	8	1.75%
Amphora fabric 1	8	1.75%
Amphora fabric 2	10	2.19%
Amphora fabric 3	36	7.88%
Amphora fabric 4	16	3.50%
Amphora fabric 5	10	2.19%
Amphora fabric 6	18	3.94%
Amphora fabric 7	4	0.88%
Amphora fabric 8	7	1.53%
Amphora fabric 9	28	6.13%
Amphora fabric 10	9	1.97%
Amphora fabric 11	1	0.22%
Amphora fabric 12	1	0.22%
Amphora fabric 13	2	0.44%
Amphora fabric 14	14	3.06%
Amphora fabric 15	15	3.28%
Total	457 Sherds	

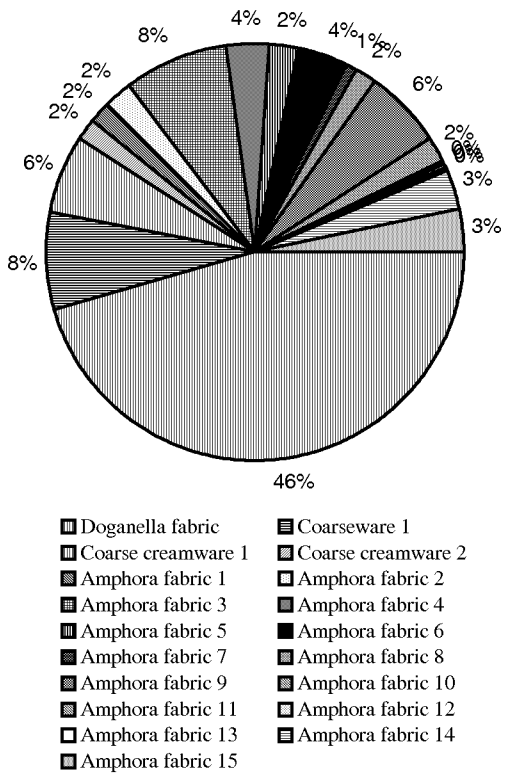


Fig.6.1.3 Amphorae

Amphorae made at Doganella are the largest group (45%), the only other types representing more than 5% are in coarseware 1, coarse cream ware 1, amphora fabric 3 and amphora fabric 9. This observation underlines the predominance of the Doganella products in this area.

Table 6.1.4 Pithoi

Fabric	*No. of Sherds*	*%*
Coarseware 1	141	29.07%
Coarseware 2	1	0.21%
Coarse cream ware 1	77	15.88%
Pithos fabric 1	3	0.62%
Pithos fabric 2	187	38.56%
Pithos fabric 3	76	15.67%
Total	485 Sherds	

Coarseware 1 and the similar pithos fabric 2 form 67% of the total between them. Pithoi in coarse cream ware 1, which contains inclusions of non-local origin, form a further 16% of the total.

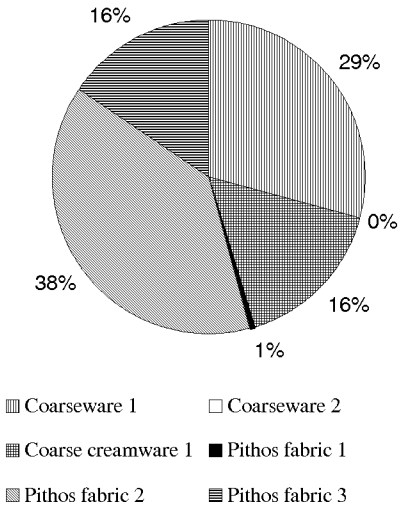


Fig. 6.1.4 Pithoi

Table 6.1.5 Proportions of wares

Fabric	*No. of Sherds*	*%*
Fine wares	884	10.88%
Coarsewares	6299	77.53%
Amphorae	457	5.62%
Pithoi	485	5.97%
Total	8125 Sherds	

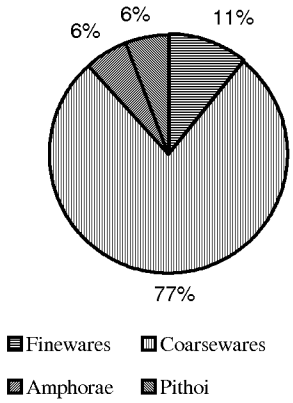


Fig.6.1.5 Proportions of wares

Overall the coarsewares can be seen to predominate. The sandy red 'impasto' is by far the most common Etruscan pottery which is found. The same fabric is also used for tiles, *pithoi* and some amphorae. The next most visible class of pottery is the fine cream ware which is the table ware of the fifth and fourth centuries. Following these the next most common class of ware are the *pithoi* and the products of Doganella the amphorae and coarseware 2. These wares are the first certain instance of an every day ceramic with a defined local distribution in Etruria.

Further economic aspects of the pottery are discussed below in Chapter 8.

6.2. Catalogue of the Ceramics

6.2.1. Fine wares

6.2.1.1 Bucchero

Four different bucchero fabrics were identified. All were quite fine and reduced to a dark grey or black

Name: Bucchero 1			**Code:** EF10				
Distinguishing features: Colour and fineness							
Colour: Black 7.5YR 2/0		**Texture:** Smooth			**Strength:** Low		
Hardness: High		**Resistance:** Medium			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Reducing		
Surface treatment: Burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.5	Transparent	Quartz?	2	Angular?	Good	

Name: Bucchero 2			**Code:** EF3				
Distinguishing features: Colour and fineness							
Colour: Black exterior, greenish grey exterior		**Texture:** Smooth			**Strength:** Low		
Hardness: Low		**Resistance:** High			**Fracture:** Finely irregular, laminar		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Reducing		
Surface treatment: Burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.5	Transparent	Quartz?	5	Sub-angular	Poor	
Particles	<0.5	Grey brown	Grog	5	Sub-angular	Good	
Particles	<1	Black	?	2	Rounded	Poor	

Name: Bucchero 3			**Code:** EF4				
Distinguishing features: Colour and fineness							
Colour: Black-dark brown		**Texture:** Slightly rough			**Strength:** Low		
Hardness: Low		**Resistance:** Medium low			**Fracture:** Finely irregular, laminar		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Reducing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.5	Whitish transparent	Quartz?	3	Angular	Poor	
Particles	<0.25	Reflective	?	5	?	Good	

Name: Bucchero 4			**Code:** EF6				
Distinguishing features: Colour and fineness							
Colour: Black		**Texture:** Smooth, soapy			**Strength:** Low		
Hardness: Low		**Resistance:** Medium			**Fracture:** Finely irregular, laminar		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Reducing		
Surface treatment: Burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<0.25	White	?	5	Sub-round	Good	
Notes: Very fine, thin walled bucchero.							

Bowls

Type 1: Plain rim. Date late sixth - fifth century.

Type 2: Plain rim with carination. Date sixth century.

Type 3: Small angular foot ring, cf. Perkins and Walker 1990, Fig.27.10. Date sixth - fifth century.

Chalices

Type 1: Various sherds of chalice (Rasmussen 1979, 95-101). These sherds do not include handles and so have been classified as chalices rather than kantharoi. Date mid seventh - mid sixth century.

Kantharoi or Kyathoi

Type 1: Sherds of strap handle from Kantharoi or Kyathoi. The illustrated example is decorated with two impressions of a rosette with a dot in the centre within a circular stamp at the base of the handle. Between and above these are three horizontal rows of square dot impressions and the edges of the handle are lined with two rows of similar impressions. The occurrence of stamping on a kantharos suggests a date in the second half of the

seventh century for this sherd. The date range for the other sherds is between the second half of the seventh and the third quarter of the sixth century (Rasmussen 1979, 101-10, 138).

Kotyle?

Type 1: Small foot ring with a steeply rising wall. The exterior is decorated with a horizontal row of horizontal 'S' shaped impressions at the narrowest point (cf. Rasmussen 1979, 138, Fig.120, Fig 415,10i) and a band of horizontal or oblique incised lines above which may be the base of rays. This scheme of decoration suggests that the sherd may be a kotyle of Rasmussen type a or b rather than a cup (Rasmussen 1979,92-4). Part of the foot ring is broken away revealing a series of oblique and horizontal incisions made in the bowl of the vessel to key it to the foot ring at the time of manufacture. Date 2nd - 3rd quarter of the seventh century.

Plate

Type 1: Shallow carinated plate with overhanging angular profile. The shape is paralleled in impasto, cf. Fig 6.2.2.1.*3*. Dating is uncertain, bucchero plates only seem to occur in the fifth century, (Rasmussen 1979, 124) but the parallel in impasto suggests a date in the late seventh to early sixth centuries.

Type	Fabric	Figure	Comments	Number of Sherds	D. in mm.	Site
Bowl 1	1	-	Ras. Bowl 4	1	140	LC101.2
Bowl 2	1	-	Ras. Bowl 2	1	220	MAR8.0
Bowl 3	2	-		1	60	SAM101.2
Chalice 1	1	-	Low foot	1	140	PR9.0
Chalice 1	1	-	2 grooves	1	-	PR9.0
Chalice 1	1	-		1	-	SD256.2
Chalice 1	2	-		2	-	SD253.1
Kantharos 1	1	-		1	-	ORB107.0
Kantharos 1	1	-		1	-	SD251.3
Kantharos 1	1	-		1	-	SD256.2
Kantharos 1	3	6.2.1.1.1		1	-	SD256.2
Kotyle 1	4	6.2.1.1.2		1	42	SD250.1
Plate 1	3	-		1	-	MAG50.2
-	1	-		2	-	MAR212.0
-	1	-		1	-	MAR39.0
-	1	-		2	-	MAR9.0
-	1	-		4	-	ORB107.0
-	1	-		1	-	ORB108.0
-	1	-		5	-	PR9.0
-	1	-		1	-	SD141.1
-	2	-		1	-	PF53.0
-	3	-		1	-	SD141.1
-	3	-		1	-	SD256.2
-	4	-		1	-	SD250.1
Total		-		34 Sherds		

6.2.1.2 Buccheroid Impasto

Name: Buccheroid Impasto 1			**Code:** EF2				
Distinguishing features: Colour and burnish							
Colour: Black surface, orange-dark red core		**Texture:** Smooth			**Strength:** Low		
Hardness: Medium low		**Resistance:** Medium			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Mixed		
Surface treatment: Burnished							
Clay matrix: Medium well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.5	Yellowish transparent	Quartz	5	Angular	Poor	
Particles	<0.25	White	Lime	1	Angular	Poor	
Grit	<0.25	Black	?	1	Sub-angular	Poor	
Grit	<1	Red	?	1	Rounded	Poor	
Notes: Finely burnished surface.							

Name: Buccheroid Impasto 2			**Code:** EF5				
Distinguishing features: Colour and burnish							
Colour: Black-grey surface, greenish brown core		**Texture:** Slightly rough			**Strength:** Low		
Hardness: Low		**Resistance:** Medium			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Mixed		
Surface treatment: Burnished							
Clay matrix: Medium well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.25	Off-white-yellow transparent	Quartz	15	Angular	Poor	
Platelets	<0.25	Silvery	Mica	2	Platelet	Poor	

Notes: Surface prone to spalling.

Name: Buccheroid Impasto 3			**Code:** EF12				
Distinguishing features: Colour and burnish							
Colour: Black		**Texture:** Smooth			**Strength:** Low		
Hardness: Medium low		**Resistance:** Low			**Fracture:** Finely irregular, laminar		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Reducing		
Surface treatment: Burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Dark brown transparent	?	5	Sub-round	Poor	
Crystal	<1	Transparent	Quartz	1	Angular	Poor	

Name: Buccheroid Impasto 4			**Code:** EF14				
Distinguishing features: Colour and burnish							
Colour: Brown-greyish green 10YR 4/2-7.5YR 4/2		**Texture:** Slightly rough			**Strength:** Low		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Mixed		
Surface treatment: Burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Transparent	Quartz	5	Angular	Poor	

This ware comprises a poorly defined group of products which contains forms similar to Bucchero forms but the fabric is rather coarser, or less well fired than Bucchero. The boundaries between Bucchero on one side and Impasto on the other are not clearly marked. Four different fabrics were identified. Distribution seems to be limited to the Doganella area.

Bowls

Type 1: Plain rim slightly out turned, cf. Perkins and Walker 1990, Fig.26.2. Date mid seventh - mid sixth century.

Type 2: Carinated bowl with vertical wall and flaring rim. The shape is similar to impasto bowl 9 and approaches the shape of a shallow chalice. The form, with or without a high foot is common throughout Etruria. A similar example is published in impasto from the upper Fiora valley (Donati and Michelucci 1981, 32 No.34, with bibliography). Date 2nd-3rd quarter of the seventh century.

Type 3: Similar to type 2 but without a vertical wall, also occurs in impasto as bowl type 9, cf. Fig. 6.2.2.1.*11*. Date mid seventh century.

Type 4: Flaring foot ring. Date mid seventh to mid sixth century.

Chalices

Type 1: Small chalice probably on a high foot, similar to Rasmussen (1979) chalice 2. The illustrated example is decorated above the carination with a horizontal line of incised dashes. Date last quarter seventh- first half sixth century.

Type 2: Carination of a chalice with two horizontal grooves above. Date last quarter seventh- first half sixth century.

Cup

Type 1: Tronco-conical bowl with a carination and off-set plain rim on a high trumpet foot. This unusual shape is essentially a skyphos of East Greek inspiration (cf. Bucchero cups of Rasmussen (1979) types 1 and 3) on a high trumpet foot. This combination does not seem to occur regularly in bucchero or impasto. Similar impasto goblets but with a less pronounced skyphos shape have been published from Poggio Buco (Matteucig 1951, 24, Nos.15-16, Pl.IV, 8-9) and are dated there to the mid seventh century. The bucchero cups of similar shape but a low foot date from the mid seventh to the early sixth centuries.

Kantharos

Type 1: This sherd is the is the lower attachment of a decorated handle. At the bottom are two sub-round impressions and above these four horizontal parallel incised grooves and above these at least two oblique grooves. Date mid seventh to mid sixth century.

Type	Fabric	Figure	Comments	No. of Sherds	D. in mm.	Site
Bowl 1	1	-		1	120	CAP159.2
Bowl 2	1	6.2.1.2.1	1 vessel	5	192	SD256.2
Bowl 2	1	-		1	-	SD256.2
Bowl 3	2	-		1	-	SD250.1
Bowl 4	2	6.2.1.2.2		1	64	SD250.1
Chalice 1	2	6.2.1.2.3		1	-	SD216.2
Chalice 1	2	-	Undecorated	2	-	SD216.2
Chalice 1	2	-	Undecorated	1	-	SD250.1
Chalice 2	3	-		1	-	SD256.2
Cup 1	2	6.2.1.2.4	1 vessel	5	84	SD250.1
Kantharos 1	2	-		1	-	SD250.1
-	3	-		2	-	SD253.0

Type	Fabric	Figure	Comments	No. of Sherds	D. in mm.	Site
-	4	-		1	-	MAR212.0
-	4	-		2	-	SD141.1
-	4	-		1	-	SD261.0
-	1	-		3	-	ORB107.0
-	2	-		1	-	MAR9.0
-	2	-		1	-	MAR9.0
-	2	-		6	-	SD250.1
Total				37 Sherds		

6.2.1.3 Grey Bucchero

Name: Grey Bucchero			**Code:** EC 2				
Distinguishing features: Colour							
Colour: Mid-grey 7.5YR 5/0		**Texture:** Rough, powdery			**Strength:** Low		
Hardness: Medium low		**Resistance:** Low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Reducing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Transparent	Quartz	3	Angular	Good	
Particles	<2	Grey	Grog	<3	Sub-round	Good	
Crystal	<1	Black	?	1	Angular	Good	
Grit	<1	Black	?	1	Sub-round	Good	
Notes:							

Mainly fifth century in date.

Bowl

Type 1: Tronco-conical bowl with a plain rim. Doganella Grey Bucchero bowl type 1; Cf. Doganella coarseware 1 bowl type 2 (Perkins and Walker 1990, Fig.32.3). Date late sixth - fifth century.

Type 2: Hemispherical bowl with plain incurving rim. Cf. Doganella coarseware 1 bowl type 1 (Perkins and Walker 1990, Fig.27.5, 32.1-2): also published from Doganella Michelucci 1984, 384, No.14, Fig.3. Date late sixth - fifth century.

Type 3: Slightly carinated bowl with gently flaring thickened rim. Doganella Grey Bucchero bowl type 3. (Perkins and Walker 1990, 26, Fig.26). Date fifth century.

Type 4: Slightly carinated bowl with a beaded rim. A very similar piece has been published from Doganella (Michelucci 1984, 385, No.15, Fig.3). Cf. Rasmussen (1979) Bowl type 3. Date fifth century.

Type 5: Turned up foot ring probably from a bowl. On the underside of the foot ring is an *ante cocturam* graffito consisting of two incised lines forming a 'V'. Date fifth century.

Type 6: Low foot ring paralleled in impasto, cf. Fig. 6.2.2.1.*21*. Date late sixth - fifth century.

Jar

Type 1: Everted, thickened and rolled rim, cf. Doganella coarseware 1 jar type 4, cf. Perkins and Walker 1990, 36, Fig.30.5. Date late sixth - fifth century.

Type	Figure	Comments	No	D.	Site
Bowl 1	-		1	140	PR38.0
Bowl 2	6.2.1.3.1		1	220	SD261.0
Bowl 2	-		2	140	TAL115.0
Bowl 2	-		1	240	PF53.0
Bowl 2	-		1	200	PR60.1
Bowl 3	-		1	140	CAP46.0
Bowl 4	6.2.1.3.2		1	200	MAN88.2
Bowl 5	6.2.1.3.3	Graffito 'V'	1	56	SAM127.0
Bowl 6	cf. Fig. 6.2.2.1.21		1	65	MAR99.0
Jar 1	-		1	240	TAL115.0
-	-		2	-	CAP34.0
-	-		1	-	COL5.0
-	-		1	-	COL5.0
-	-		1	-	FP114.2
-	-	Burnished	1	-	MAG20.0
-	-		2	-	MAR231.0
-	-		1	-	PF53.0
-	-		2	0	PR60.1
-	-		1	-	PR9.0
-	-		3	-	SAM22.1
-	-		1	-	TAL115.0
Total			27 Sherds		

6.2.1.4 Fine Creamware

Name: Fine Creamware			**Code:** EF 8				
Distinguishing features: Colour and fineness							
Colour: Greenish or pinkish cream 7.5YR 7/4		**Texture:** Smooth, powdery			**Strength:** Low		
Hardness: High		**Resistance:** Low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Mixed		
Surface treatment: Self-same slip, some red paint.							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.5	Transparent	Quartz	<1	Angular	Poor	
Particles	<0.5	Orange	Grog?	<1	Sub-round	Good	
Particles	<0.5	Black	?	<1	Sub-round	Good	
Voids	<0.25	-	-	<1	-	-	

The fine creamware has been described using the same system as in Perkins and Walker 1990, 27-31, where a full list of parallels is provided. All descriptions are taken from Perkins and Walker 1990, 27-30 but are annotated where the

material from the valley provides more detail, for example if a diameter range is given here it indicated an increase in the range found at Doganella. Shapes not found at Doganella are numbered in continuation of this scheme and are illustrated.

Bowls

Type 1: Large bowl with slightly thickened vertical rim, hemispherical or gently carinated (cf. Perkins and Walker 1990, Fig. 26.16-17). Date: fifth-early third century.

Type 2: Small bowl with a pointed incurving rim and slight carination (cf. Perkins and Walker 1990, Fig. 26.18). D.100-120.

Type 4: Large bowl with flaring body and plain rim (cf. Perkins and Walker 1990, Fig. 26.20). D.140-200.

Type 5: Bowl with out turned rim and horizontal upper surface (cf. Perkins and Walker 1990, Fig. 26.21).

Type 7: Small bowl with beaded rim (cf. Perkins and Walker 1990, Fig. 26.23-24).

Type 8: Small bowl with beaded rim and a distinct carination (cf. Perkins and Walker 1990, Fig. 27.1)

Type 11: Tronco-conical bowl with a slightly curved wall and a plain rim (cf. Perkins and Walker 1990, Fig. 27.4). D.120-220.

Type 12: Bowl with incurving wall and plain rim (cf. Perkins and Walker 1990, Fig. 27.5). D.90-220.

Type 13: Shallow tronco-conical bowl with a plain angular rim. D.140-160.

Type 14: Shallow bowl with a slightly curved wall and a plain rim. D.120. This shape is paralleled in Black Gloss ware as Morel (1981) 2982 where it is dated to the first half of the third century and is found in central and southern Etruria.

Bases

Type 1: Out-turned foot ring with distinct angle at its widest point (cf. Perkins and Walker 1990, Fig. 27.6-7). D.60-110.

Type 2: Out-turned with a rounded profile (cf. Perkins and Walker 1990, Fig. 27.8-9). D.60-120.

Type 3: Foot ring with an angular profile (cf. Perkins and Walker 1990, Fig. 27.10). D.60-120.

Type 5: Disc base (cf. Perkins and Walker 1990, Fig. 27.12). D.50-110.

Type 9: High foot ring. Stamped with two concentric circles in the centre of the interior of the base. D.62.

Type 10: Angular foot ring with two grooves on the exterior. D.90.

Type 11: Flat base with a nipple in the centre of the interior. D.38.

Chalices

Type 1: Low, everted foot ring with a curved profile, carinated body with an off set wall and a plain rim (cf. Perkins and Walker 1990, Fig. 26.7-8). Base D.50-100.

Cups

No cup rims or bases were identified at Doganella although two cup type handles were found (Perkins and Walker 1990, 30, Miscellaneous 4 and 7). Similar cups, but with painted geometric decoration and a footring base occur at Casale Pian Roseto (Murray Threipland and Torelli 1970, 76-77, Fig. 14). The fragments from ORB40.0 are sherds of two skyphoi, one with yellow ochre paint on the interior and exterior.

Type 1: Curved wall with an out-turned pointed rim. D.80-170.

Handles

Type 1: Horizontal cup handle (cf. Perkins and Walker 1990, Fig. 28.8-9), listed as Miscellaneous type 4 at Doganella (Perkins and Walker 1990, 30).

Bases

Type 1: Simple small flat base (cf. Perkins and Walker 1990, Fig. 31.12). D.40-60.

Jars

Type 1: Simple everted and thickened rim (cf. Perkins and Walker 1990, Fig. 27.18-19). D.80-200.

Type 2: Similar to type 1 but with the rim thickened by folding inwards (cf. Perkins and Walker 1990, Fig. 27.20-21).

Type 3: Jar with near vertical neck and beaded rim (cf. Perkins and Walker 1990, Fig. 27.22-23). D.50-160.

Type 4: Rim folded first outwards then inwards forming and internal lip.

Type 5: Jar with collared neck, (cf. Perkins and Walker 1990, Fig. 27.24-25).

Type 6: Jar with a short neck folded outwards to form a concave collar with two to three grooves on the rim (cf. Perkins and Walker 1990, Fig. 27.26-27). D.120-240.

Type 10: Thin walled incurving wall with out-turned lip. D. 140.

Handle

Type 1: Loop handle, (cf. Perkins and Walker 1990, Fig. 31.9).

Bases

Type 1: Flat base with either a slight splaying or a distinct groove at the base of the wall (cf. Perkins and Walker 1990, Fig. 28.1-4). D.35-180.

Type 2: Simple flat base (cf. Perkins and Walker 1990, Fig. 31.10). D.72-160.

Type 3: Large foot ring. D. 100-140.

Kantharos

The shape is not recorded at Doganella, but a single sherd of Kantharos style handle was found.

Miscellaneous

Type 5: ?Jug handle (cf. Perkins and Walker 1990, Fig. 28.10)

Type 6: Handle with oval section.

Type 9: Bucket type handle attached to the top of the rim.

Oinochoe

Type 1: Jug with a near vertical neck and a plain rim from which the handle springs. The handle is of circular section with an appliqué thumb rest at its highest point. The body is ovoid with a flat base. D.70-120.

Stemmed Plates

Type 1: Overhanging rim distinct from body, marked by a slight carination on the exterior and a groove on the interior (cf. Perkins and Walker 1990, Fig. 26.9-10).

Type 2: Overhanging flared rim indistinct from body. (cf. Perkins and Walker 1990, Fig. 26.11). D.140-220.

Type 4: Wide, flat everted rim with slight carination on the interior (cf. Perkins and Walker 1990, Fig. 26.13). D.160-165).

Feet

Type 1: Splayed foot with a short thick stem with an articulated inner surface (cf. Perkins and Walker 1990, Fig. 26.14).

Type	Figure	Comments	No	D.	Site
Bowl 1	-		1	220	FP61.1
Bowl 1	-		2	100	MAN260.0
Bowl 1	-		1	240	ORB107.0
Bowl 2	-		1	100	ORB107.0
Bowl 4	-		1	160	PR48.0
Bowl 4	-		1	140	SD174.1
Bowl 5	-		1	160	LC101.2
Bowl 7	-		2	200	CAP164.2
Bowl 7	-		1	140	MAN113.2
Bowl 7	-	red paint	1	100	SD277.2
Bowl 8	-		1	120	FP23.0
Bowl 11	-		1	220	FP114.1
Bowl 11	-		4	180	LC12.0
Bowl 11	-		1	160	LC12.0
Bowl 11	-		1	180	MAR103.0
Bowl 11	-		1	160	PR60.1
Bowl 12	-		1	110	CAP164.6
Bowl 12	-		4	120	MAR37.0
Bowl 12	-		1	180	ORB35.0
Bowl 12	-		1	140	ORB35.0
Bowl 12	-		1	120	PF23.0
Bowl 12	-		1	140	PF52.0
Bowl 12	-		1	220	PF53.0
Bowl 12	-		1	160	PR56.0
Bowl 12	-		1	120	SD180.0
Bowl 13	-		1	140	PR48.0
Bowl 13	6.2.1.4.1		1	160	PR49.0
Bowl 14	6.2.1.4.2		1	120	SD174.1
Bowl unidentified	-		1	50	CAP150.0
Bowl unidentified	-		1	100	PF23.0
Bowl base 1	-		1	110	PF53.0
Bowl base 1	-		1	90	PR54.0
Bowl base 2	-		1	120	COL1.0
Bowl base 2	-		1	100	PR60.1
Bowl base 2	-		1	60	SAM22.1
Bowl base 2	-	Reduced	1	70	SAM22.1
Bowl base 2	-		1	80	SD174.1
Bowl base 3	-		1	120	CAP164.6
Bowl base 3	-		1	80	CAP256.0
Bowl base 3	-		1	70	CAP46.0
Bowl base 3	-		1	70	COL5.0
Bowl base 3	-		1	60	LC10.2
Bowl base 3	-		1	80	MAR99.0
Bowl base 3	-		1	60	ORB107.0
Bowl base 3	-		1	90	ORB108.0
Bowl base 3	-		1	-	ORB108.0
Bowl base 3	-		2	130	PF52.0
Bowl base 3	-		1	0	SD174.1
Bowl base 5	-		1	110	CAP159.2
Bowl base 5	-		1	80	CAP164.6
Bowl base 5	-		1	50	FP116.1
Bowl base 5	6.2.1.4.1 2		1	70	MAR99.0
Bowl base 5	-		1	80	ORB35.0
Bowl base 5	-		2	100	PR10.0
Bowl base 5	-		2	70	PR48.0
Bowl base 5	-		1	110	PR48.0
Bowl base 5	-		1	80	PR60.1
Bowl base 9	6.2.1.4.3	Stamped	1	62	CAP174.1
Bowl base 10	6.2.1.4.4		1	90	CAP46.0
Bowl base 11	6.2.1.4.5		1	38	SD180.0
Chalice	-		1	180	CAP100.0
Chalice	-		1	-	ORB108.0
Chalice base	-		1	80	CAP33.1
Chalice base	-		1	0	CAP34.0
Chalice base	-		1	50	COL5.0
Chalice base	-		1	60	MAG50.1
Chalice base	-		1	80	MAG50.1
Chalice base	-		1	100	MAR213.0
Chalice base	-		1	80	PF121.2
Chalice base	-		1	60	PR48.0
Chalice base	-		1	40	SD150.3
Chalice base	-		1	76	SD250.3
Chalice base	-		1	80	SD250.3
Chalice base	-		2	-	SD277.2
Chalice base	-		3	60	SD277.2
Cup 1	-		1	80	LC10.2
Cup 1	-		3	120	ORB40.0
Cup 1	6.2.1.4.6		4	170	SD180.0
Cup handle 1	-		1	-	MAG50.2
Cup handle 1	-		1	-	ORB108.0
Cup handle 1	-	Ochre paint	3	-	ORB40.0
Cup handle 1	-		1	-	PR48.0
Cup handle 1	-		1	-	PR75.0
Cup handle 1	-		1	-	SD174.1
Cup handle 1	-		3	-	SD180.0
Cup handle 1	-		1	-	SD277.2
Cup base 1	-		4	40	ORB40.0
Cup base 1	-		5	60	ORB40.0
Jar 1	-		1	140	CAP33.1
Jar 1	-		3	120	CAP33.1
Jar 1	-		1	120	CAP33.1
Jar 1	-		1	120	CAP46.0
Jar 1	-		1	-	MAR21.2
Jar 1	Perkins and Walker 1990, Fig. 27.18		2	100	MAR39.0
Jar 1	-		1	140	SD174.1
Jar 1	-		1	200	SD174.1
Jar 2	-		1	-	PR59.1
Jar 3	-		1	50	CAP33.1
Jar 3	6.2.1.4.7		1	140	MAR213.0
Jar 3	-		1	140	MAR223.0
Jar 3	-		1	150	PR48.0
Jar 3	-		1	140	SD277.2
Jar 4	6.2.1.4.8		1	120	SD174.1
Jar 5	-		1	160	SD174.1
Jar 6	-		1	120	CAP159.2
Jar 6	-		2	180	ORB35.0
Jar 6	-		1	240	SD261.0
Jar 10	6.2.1.4.9		1	140	SD250.1
Jar unidentified	-		1	120	CAP46.0
Jar unidentified	-		1	-	SD168.0
Jar handle 1	-		1	-	CAP63.0
Jar base 1	-		1	90	CAP89.1
Jar base 1	-		1	60	MAR39.0
Jar base 1	-		1	100	MAR99.0
Jar base 1	-		1	90	ORB35.0
Jar base 1	-		1	50	ORB63.0
Jar base 1	-		1	180	SD277.2
Jar base 2	-		1	110	CAP46.0
Jar base 2	-		1	100	MAR97.0
Jar base 2	-		1	140	FP61.1
Jar base 2	-		1	200	PF22.0
Jar base 2	-		1	130	PR60.1
Jar base 2	-		1	160	PR76.1
Jar base 2	-		1	140	PR9.0
Jar base 2	-		1	130	SD277.2
Jar base 3	6.2.1.4.10		2	120	SD180.0
Jar base 3	-		1	140	SD180.0
Jar base 3	-		1	100	SD180.0
Kantharos	-		1	-	ORB108.0
Miscellaneous 5	-		1	-	CAP34.0

Type	Figure	Comments	No	D.	Site
Miscellaneous 5	-		2	-	ORB108.0
Miscellaneous 5	-		1	-	SAM106.2
Miscellaneous 5	-		1	-	SD141.2
Miscellaneous 6	-		1	-	CAP253.0
Miscellaneous 6	-		1	-	MAR6.0
Miscellaneous 6	-		1	-	SD174.1
Miscellaneous 9	-		1	-	CAP164.1
Miscellaneous 9	-		1	-	CAP256.0
Miscellaneous 9	-		1	-	CAP46.0
Miscellaneous 9	-		1	-	CAP88.1
Miscellaneous 9	-		1	-	MAR88.0
Miscellaneous 9	-		1	-	ORB107.0
Miscellaneous 9	-		4	-	SD174.1
Miscellaneous 9	-		1	140	TAL10.0
Oinochoe 1	-		1	70	CAP33.1
Oinochoe 1	6.2.1.4.11		2	-	ORB35.0
Oinochoe	-		1	-	FP114.1
Oinochoe	-		3	-	ORB35.0
Oinochoe	-		2	-	PR60.1
Stemmed Plate 1	-		1	-	MAR37.0
Stemmed Plate 1	-		1	-	ORB108.0
Stemmed Plate 1	-		1	160	SD180.0
Stemmed Plate 2	-		1	140	CAP159.2
Stemmed Plate 2	-		1	160	CAP46.0
Stemmed Plate 2	-		1	180	MAR99.0
Stemmed Plate 2	-		1	-	ORB107.0
Stemmed Plate 2	-		1	180	SAM101.2
Stemmed Plate 2	-		1	220	SD184.2
Stemmed Plate 4	-		1	160	PR48.0
Stemmed Plate foot 1	-		1	60	MAR14.0
Stemmed Plate foot 1	-	Post-cocturam graffito on underside of foot '...IAII' ('A' retrograde, poor condition, but is only complete character, initial 'II' are very close, may well be double scratch for single character.	1	60	MAR39.0
Stemmed Plate foot 1	-		1	-	PF117.0
Stemmed Plate foot 1	-		1	70	PR48.0
Stemmed Plate foot 1	-		1	65	PR60.1
Stemmed Plate foot 1	-		1	-	SAM19.0
Stemmed Plate foot 1	-		1	-	SD180.0
Stemmed Plate foot 1	-		1	-	TAL422.1
-	-		5	-	CAP33.1
-	-		17	-	CAP34.0
-	-		33	-	CAP46.0
-	-		1	-	CAP50.0
-	-		5	-	CAP76.0
-	-		5	-	CAP89.1
-	-		2	-	CAP100.0
-	-		4	-	CAP150.0
-	-		5	-	CAP159.2
-	-		1	-	CAP159.5
-	-		3	-	CAP164.1
-	-		2	-	CAP164.2
-	-		2	-	CAP164.6
-	-		1	-	CAP174.0
-	-		2	-	CAP253.0
-	-		3	-	COL2.0
-	-		5	-	COL5.0
-	-		1	-	FP13.3
-	-		5	-	FP61.1
-	-		2	-	FP102.2
-	-		15	-	FP114.1
-	-		2	-	FP114.5
-	-		1	-	LC2.0
-	-		4	-	LC10.2
-	-		17	-	LC12.0
-	-		4	-	LC101.2
-	-		1	-	LC101.2
-	-		1	-	MAG17.0
-	-		5	-	MAG50.2
-	-		2	-	MAG54.1
-	-		8	-	MAG152.2
-	-		2	-	MAG161.1
-	-		1	-	MAG162.0
-	-		2	-	MAN54.4
-	-		4	-	MAN88.2
-	-		1	-	MAN96.2
-	-		1	-	MAN97.0
-	-		1	-	MAN108.0
-	-		1	-	MAN113.2
-	-		1	-	MAN266.0
-	-	Grooved	1	-	MAN271.2
-	-		6	-	MAR37.0
-	-		1	-	MAR41.0
-	-		1	-	MAR48.0
-	-		1	-	MAR75.0
-	-		2	-	MAR78.0
-	-		2	-	MAR79.0
-	-		3	-	MAR87.2
-	-		5	-	MAR99.0
-	-		1	-	MAR103.0
-	-		1	-	MAR210.2
-	-		1	-	MAR213.0
-	-		2	-	MAR216.0
-	-		1	-	MAR223.0
-	-		1	-	MAR231.0
-	-		26	-	ORB35.0
-	-		5	-	ORB35.0
-	-		22	-	ORB40.0
-	-		1	-	ORB41.0
-	-		2	-	ORB103.0
-	-		6	-	ORB107.0
-	-		48	-	ORB108.0
-	-		1	-	ORB109.0
-	-		2	-	ORB112.2
-	-		5	-	PF8.0
-	-		4	-	PF9.2
-	-		2	-	PF16.0
-	-		1	-	PF20.2
-	-		3	-	PF20.2
-	-		2	-	PF22.0
-	-		7	-	PF23.0
-	-		2	-	PF24.0
-	-		1	-	PF26.0
-	-		1	-	PF31.0
-	-		1	-	PF52.0
-	-		9	-	PF53.0
-	-		1	-	PF102.3
-	-		1	-	PF105.2
-	-		1	-	PF117.0
-	-		2	-	PR9.0
-	-		1	-	PR10.0
-	-		1	-	PR13.0
-	-		1	-	PR15.0
-	-		4	-	PR38.0
-	-		4	-	PR41.0
-	-		1	-	PR46.2
-	-		11	-	PR48.0
-	-		1	-	PR49.0

Type	Figure	Comments	No	D.	Site
-	-		2	-	PR56.0
-	-		7	-	PR59.1
-	-		11	-	PR60.1
-	-		1	-	PR76.1
-	-		1	-	PR77.1
-	-		5	-	SAM22.1
-	-	Reduced	2	-	SAM22.1
-	-		3	-	SAM41.1
-	-		1	-	SAM114.0
-	-		1	-	SAM127.0
-	-		1	-	SAM130.2
-	-		1	-	SD132.0
-	-		1	-	SD141.1
-	-		1	-	SD141.3
-	-		1	-	SD150.3
-	-		5	-	SD168.0
-	-		32	-	SD174.1
-	-		58	-	SD180.0
-	-		1	-	SD184.2
-	-		2	-	SD195.0
-	-		1	-	SD225.0
-	-		10	-	SD250.3
-	-		1	-	SD255.0
-	-		1	-	SD256.0
-	-		1	-	SD262.0
-	-		12	-	SD277.2
-	-		20	-	TAL10.0
-	-		2	-	TAL217.1
-	-		4	-	TAL422.1
Total			786 Sherds		

6.2.2. Coarsewares

6.2.2.1 Impasto

The term '*impasto*' has a variety of meanings in Italian pottery studies, some precise and some rather wide ranging. '*Impasto*' is frequently used in the same way as 'fabric' in English to indicate the fired combination of clay and fluxes and fillers used to make pottery. However, the word is also used generally to describe 'coarseware' where clay that has not been well elutriated is used to model vessels. This kind of pottery is also commonly called '*ceramica comune*'.

In Etruscan pottery studies the term '*impasto*' has a rather more precise meaning. It is used to describe a class of burnished and slipped wares which are usually wheel-made and commonly decorated in relief or with impressions. The fabrics of this '*impasto*' are often quite coarse and poorly depurated but the surfaces are burnished and polished to a fine and smooth finish. Firing is variable; some examples are strongly and evenly oxidised to a bright orange, but many have evidence of mixed firing conditions shown by mottled colours from dark red to greenish brown to black. Such variations in the colour of the finish may indicate the use of a clamp kiln or even a bonfire for firing. This '*impasto*' dates between the late 8th and the late 6th century BC. There is no synthetic study of this class of ceramics but a catalogue of finds from Cerveteri provides a useful overview and detailed notes (Bosio and Pugnetti 1986).

The fabrics of this Etruscan '*impasto*' are variable suggesting a low degree of standardisation and a wide range of production centres. A variety of '*impasto*' fabrics were recorded in the survey collection; one (EC1) was a burnished version of Coarseware 1.

Name: Impasto 1			**Code:** EF1				
Distinguishing features: Soft, uneven oxidation and burnished							
Colour: Orange-dark red-black		**Texture:** Slightly rough			**Strength:** Low		
Hardness: Medium low		**Resistance:** Medium low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Mixed		
Surface treatment: Burnished, some highly polished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.25	Transparent / white and grey	Quartz	20	Angular	Poor	
Particles	<0.25	White	Lime	2	Angular	Poor	
Particles	<0.25	Red	?Grog	2	Sub-round	Poor	
Irregular voids	<0.5	-	-	1	Sub-round	Poor	Organic shapes?
Notes: Can be similar to the 'Buccheroid' fabrics but more sandy and not well reduced. Surfaces not evenly oxidised leading to variable colouring.							

Name: Impasto 2			**Code:** EF17				
Distinguishing features: Orange fabric and dark orange burnished slip							
Colour: Dark orange surface, brown core		**Texture:** Smooth			**Strength:** Medium		
Hardness: Low		**Resistance:** High			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidising		
Surface treatment: Slipped and burnished							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.25	Translucent grey/brown	?Quartz	5+	Sub-angular	Good	
Crystal	<0.25	Transparent	?Quartz/Sanidine	2+	Angular	Poor	
Particles	<0.25	White	Lime	1	Angular	Poor	
Particles	<0.1	Black	?	1	Round	Poor	
Platelets	<0.25	Silver	Mica	1	Laminar	Poor	
Voids	<0.25	-	-	3	Laminar	Poor	
Notes: Where the slip is eroded the fabric abrades easily.							

Name: Coarseware 1			**Code:** EC1				
Distinguishing features: Sandy, orange - brown colour							
Colour: Orange - dark red - brown - black. 2.5YR 5/6-8		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Rough		
Manufacture Wheel		**Firing temperature:** Low- medium			**Firing atmosphere:** Mixed		
Surface treatment: burnished							
Clay matrix: Medium - well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<2	Transparent	Quartz	5-20	Angular	Poor	
Particles	<1	White	Lime	1-5	Sub-angular	Poor	
Particles	<2	Orange	Grog	1-5	Sub-round	Poor	
Grit	<1	Brown-black	?	1-5	Sub-round	Poor	
Notes: A very variable fabric, generally very sandy and orange-brown in colour. The main variation is in the size and amount of the quartz inclusions.							

Bowls

Bowls occur in a variety of shapes. Many may also have served as lids.

Type 1: Hemispherical bowl with plain incurving rim. Cf. Doganella coarseware 1 bowl type 1 (Perkins and Walker 1990, Fig.27.5, 32.1-2). The illustrated example from ORB40.0 is unusual in that it is decorated with sub-round impressions made from the exterior causing pimples on the interior. A very similar pieces was found in grave 27 at Marsiliana (Minto 1921, 64, 286, Tav. L,3), and another is on display in the Museo di preistoria e protostoria della valle del fiume Fiora in Manciano, the provenance is unknown. The decoration of the Marsiliana example was executed from the interior.

Type 2: Tronco-conical bowl with a plain rim. Cf. Doganella coarseware 1 bowl type 2 (Perkins and Walker 1990, Fig.32.3). Simple bowls of this shape are uncommon in *impasto* and the sherds may in fact be rims of chalices.

Type 3: Tronco-conical bowl with a flaring plain rim. Cf. Perkins and Walker 1990, Fig.26.20. This example has a red slip on the interior and exterior

Type 4: Tronco-conical bowl with a plain rim and three grooves near the rim on the interior. This rim may be a rim sherd of a *holmos* or pot stand rather then a bowl.

Type 5: Tronco-conical bowl with an incurving rim and a small flat base.

Type 6: Incurving squared off plain rim. The rim appeared to have been cut and one part had a smeared edge. The interior was vertically wiped and the exterior vertically burnished except at the rim where the burnishing was horizontal. The sherd may in fact be the edge of a *holmos* perforation rather than a rim.

Type 7: Deep footless slightly carinated bowl with a slightly out curving rim and a distinct lip on the interior of the rim.

Type 8: Carinated bowl with in turned rim. Similar bowls were found at Poggio Volpaio (cf. below Nos. 23, 25-7). The example from ORB41.4 is decorated with two grooves on the exterior of the upper part of the wall with a line of impressed petal motifs between and a vertical cordon. The form is common in Etruria and the Albegna Valley (Michelucci 1982, 58; Donati and Michelucci 1981, 30-32), however the decorative scheme is unusual.

Type 9: Shallow bowl with sharp carination and flaring rim. Similar to a piece in The Museo Civico di Bologna (Montanari 1929 Pl.10 No.4). Date mid seventh century.

Type 10: Slightly out curving vertical rim with at least one loop handle rising from the rim. The base of the handle is impressed on the exterior with three parallel horizontal lines *a falsa cordicella*. Similar vessels have been found at Poggio Buco (Matteucig 1951, 21 no. 1512, Pl.II,8; Bartoloni, 1972, 50, Fig. 20,12) and in the upper Albegna Valley (Donati and Michelucci 1981, 33 No.38), dated to the first half of the seventh century.

Holmos

Type 1: Bell shaped lower section with a slightly thickened everted rim with 2 grooves on the exterior and at least two triangular openings. Above a spheroid central section. Cf. Bosio and Pugnetti 1986, 34 No.2. Similar examples have been found at Vulci, Poggio Buco and Pitigliano (Bosio and Pugnetti 1986, 91, n.78) and Saturnia (Michelucci 1982, 56 No.41, Fig 37).

Jars

The jars are all of the very common stamnoid type and have been differentiated according to the shape of the neck and details of the rim. Currently there is no detailed study of these characteristic, but very variable jars which date between the late eighth and the mid sixth centuries (Bosio and Pugnetti 1986, 91-2).

Type 1: Globular jar with a cylindrical neck and a flaring rim. A further example was found at Poggio Volpaio (cf. below No. 30).

Type 2: Plain everted rim with an inverted tronco-conical neck.

Type 3: Everted rim with distinct lid seating, cylindrical neck and distinct shoulder.

Type 4: Everted and overhanging rim with 2 distinct grooves at the top of the rim, an inverted tronco-conical neck and distinct shoulder. This shape was associated with a flat base and had a red exterior slip.

Type 5: Plain everted rim with lid seating and no distinct neck.
Type 6: Everted bulbous rim with distinct lid seating and a cylindrical neck.
Type 7: Plain everted bulbous rim with grooves on the interior, cf. Doganella coarseware 2 Jar type 1 (Perkins and Walker 1990, Fig.36.8).

Handle

Typical handle of stamnoid jar, e.g. Bosio and Pugnetti 1986, 45 No.1.

Bases

Type 1: Flat base.
Type 2: Globular body with a low footring.

Lid

Type 1: Beaded rim with groove on the interior.

Plates

Impasto plates occur widely in assemblages from Etruria, Latium and Campania. Details of the rim and carination vary and some examples have overpainted geometric decoration. Plates date to the seventh century and perhaps into the early sixth. For a summary see Bosio and Pugnetti 1986, 92-3, n.105.

Type 1: Shallow plate with a slight carination and a plain rim. The form also occurs in Coarseware 1.
Type 2: Plate with horizontal rim.
Type 3: Shallow plate with angular carination and off-set, overhanging angular rim. This shape also occurs in bucchero.
Type 4: Shallow plate with rounded carination and off-set plain rim, angular foot ring and a nipple in the centre of the plate. Examples bore a red slip on the interior and exterior. This shape is closely paralleled at Cerveteri (Bosio and Pugnetti 1986, 59 no.29).

Body Sherds

Among the body sherds were pieces of a chalice, a kantharos and a bowl.

Type	Fabric	Figure	Number of Sherds		D. in mm.	Site
Bowl 1	EF1	6.2.2.1.5	8		160	ORB40.0
Bowl 1	EC1	-	5		160	ORB41.0
Bowl 1	EC1	-	5		180	ORB41.0
Bowl 2	EF1	-	1		160	SD168.0
Bowl 2	EF1	-	1		-	PR50.0
Bowl 2	EC1	-	2		190	PF1.3
Bowl 3	EC1	-	8		220	SD250.1
Bowl 4	EF1	6.2.2.1.6	1		140	SD168.0
Bowl 5	EC1	6.2.2.1.7	30	(1 vessel)	230	SD180.0
Bowl 5	EC1	-	2		260	ORB41.0
Bowl 6	EC1	6.2.2.1.8	1		320	SD256.0
Bowl 7	EC1	6.2.2.1.9	47	(1 vessel)	250	ORB72.0
Bowl 7	EC1	-	1		-	ORB72.0
Bowl 7	EC1	-	6		160	ORB72.0
Bowl 8	EF1	6.2.2.1.10	2		200	ORB41.0
Bowl 8	EF1	-	1		230	ORB40.0
Bowl 9	EC1	-	1		80	PR9.0
Bowl 9	EF1	-	5		200	MAR16.0
Bowl 9	EF1	6.2.2.1.11	6	(1 vessel)	196	SD250.1
Bowl 9	EF1	-	2	(1 vessel)	172	SD250.1
Bowl 9	EF1	-	1		-	PR9.0
Bowl 10	EC1	6.2.2.1.12	1		190	ORB108.0
Bowl?	EF1		4		-	MAG161.1
Chalice	EF1		1		-	SD256.2
Holmos 1	EC1	6.2.2.1.23	4		170	ORB41.0
Jar 1	EC1	6.2.2.1.13	1		120	PR59.1
Jar 1	EC1	-	104	(1 vessel)	240	ORB41.0
Jar 1	EC1	-	1		180	PR24.0
Jar 1	EC1	-	2		-	TAL405.3
Jar 1	EF1	-	1		160	MAR20.1
Jar 1	EF1	-	3		220	ORB41.1
Jar 1	EF1	6.2.2.1.14	1		136	SD256.2
Jar 2	EF1	6.2.2.1.15	29	(1 vessel)	170	ORB40.0
Jar 3	EF1	6.2.2.1.16	41	(1 vessel)	180	ORB40.0
Jar 4	EF1	6.2.2.1.17	134	(1 vessel)	170	ORB41.0
Jar 5	EF1	6.2.2.1.18	1		140	FP13.3
Jar 6	EC1	6.2.2.1.19	1		200	MAR20.1
Jar 7	EF1	-	1		180	CAP46.0
Jar 8	EF1	-	2		200	FP13.3
Jar Handle	EF1	-	1		-	ORB40.0
Jar Base 1	EF1	-	1		140	FP13.3
Jar Base 1	EF1	-	1		60	CAP46.0
Jar Base 1	EF1	-	4		40	PF102.3
Jar Base 1	EF17	-	1		240	MAG50.2
Jar Base 2	EF1	6.2.2.1.20	2		88	SD250.1
Jar Base 2	EF1	-	1		72	SD141.1
Jar Base2	EF17	6.2.2.1.21	1		90	MAG50.2
Kantharos	EF1		1		-	SD250.1
Lid 1	EF1	6.2.2.1.22	1		140	PF14.0

Type	Fabric	Figure	Number of Sherds	D. in mm.	Site
Plate 1	EF1	6.2.2.1.1	1	300	CAP46.0
Plate 1	EF1	-	1	240	CAP46.0
Plate 2	EF17	6.2.2.1.2	4	220	MAG20.0
Plate 3	EF17	6.2.2.1.3	1	260	MAG50.2
Plate 4	EC1	6.2.2.1.4	8	240	SD250.1
Plate 4	EC1	-	5	-	SD250.1
-	EF1	-	1	-	CAP164.2
-	EF1	-	7	-	CAP46.0
-	EF1	-	1	-	MAR20.1
-	EF1	-	1	-	MAR91.0
-	EF1	-	5	-	MAR31.0
-	EF1	-	1	-	SD141.3
-	EF1	-	1	-	SD168.0
-	EF1	-	3	-	ORB107.0
-	EF1	-	12	-	ORB40.0
-	EF1	-	1	-	SD256.2
-	EF1	-	1	-	LC51.0
-	EF1	-	1	-	ORB223.1
-	EF1	-	5	-	PR9.0
-	EF17	-	1	-	MAR8.0
-	EF17	-	4	-	MAG50.2
Total			547 Sherds		

6.2.2.2 Coarseware 1

This is the most common type of Etruscan fabric.

Name: Coarseware 1			**Code:** EC1				
Distinguishing features: Sandy, orange - brown colour							
Colour: Orange - dark red - brown - black. 2.5YR 5/6-8	**Texture:** Rough		**Strength:** Medium				
Hardness: Medium	**Resistance:** Medium		**Fracture:** Rough				
Manufacture Wheel	**Firing temperature:** Low- medium		**Firing atmosphere:** Mixed				
Surface treatment: none - wiped - burnished							
Clay matrix: Medium - well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<2	Transparent	Quartz	5-20	Angular	Poor	
Particles	<1	White	Lime	1-5	Sub-angular	Poor	
Particles	<2	Orange	Grog	1-5	Sub-round	Poor	
Grit	<1	Brown-black	?	1-5	Sub-round	Poor	
Notes: A very variable fabric, generally very sandy and orange-brown in colour. The main variation is in the size and amount of the quartz inclusions. It forms a loose group, impossible to consistently sub-divide.							

Basins

The basins are numbered using the same types as for Coarse Creamware 1, except types 7,10 and 11.

Type 2: Plain squared-off rim with slight ledge on the exterior, (cf. Perkins and Walker 1990, Fig. 28.14).

Type 3: Plain squared-off rim with slight ledge on the exterior and a cordon below, (cf. Perkins and Walker 1990, 32).

Type 4: Almond shaped rim section, (cf. Perkins and Walker 1990, Fig. 28.15, 36.19). D.130-500.

Type 5: Basin with cordoned rim, (cf. Perkins and Walker 1990, Fig. 28.16)

Type 7: Thick flat basin or baking tray with up-turned rim, (cf. Perkins and Walker 1990, Fig. 32.19).

Type 8: Steeply sloping wall with rim thickened to the interior and exterior, (cf. Perkins and Walker 1990, Fig. 29.3).

Type 10: Thickened on the interior, (cf. Perkins and Walker 1990, Fig. 37.7, Coarseware 2 basin type 6). D160-200.

Type 11: Plain rim, (cf. Perkins and Walker 1990, Fig. 32.3, coarseware 1 bowl 2). D.320-420.

Base

Type 2: Simple foot ring, (cf. Murray Threipland and Torelli 1971, Fig. 18 No.14); Perkins and Walker 1990, 33). D.130-240.

Type	Figure	Comments	No.	D.	Site
Basin 2	-		1	180	CAP46.0
Basin 2	-		1	-	PR9.0
Basin 3	6.2.2.2.1		1	380	FP114.5
Basin 4	-		1	-	MAN262.0
Basin 4	-		1	-	MAN92.1
Basin 4	-		1	130	MAR88.0
Basin 4	-		1	340	MAR99.0
Basin 4	-		1	300	PR9.0
Basin 5	-		1	320	PR60.1
Basin 7	6.2.2.2.2		1	280	FP31.1
Basin 7	6.2.2.2.3		1	350	MAN88.2
Basin 8	-		1	-	CAP46.0
Basin 8	-		1	-	LC101.2
Basin 8	-	Red slip	1	220	MAG73.2
Basin 8	-		1	180	PR10.0
Basin 8	-		1	260	PR56.0
Basin 10	-	Poorly fired	1	-	MAR48.0
Basin 10	-		1	160	MAR216.0
Basin 10	-		1	240	SAM17.0
Basin 10	-		1	200	SD141.1
Basin 11	-	Red slip	1	-	CAP100.0
Basin 11	-		1	-	MAG4.1
Basin 11	-		1	320	PR9.0
Basin 11	-		1	420	PR9.0
Basin base 2	-		1	130	MAR66.0
Basin	-		1	350	CAP50.0

Type	Figure	Comments	No.	D.	Site
Total			26 Sherds		

Bowls

Type 1: Hemispherical bowl, sometimes with a slightly incurving rim, (cf. Perkins and Walker 1990, Fig. 32.1-2, 36.16). An illustrated example (Fig. 6.2.2.2.*5*) is paralleled in Buccheroid Impasto at Vetulonia (Camporeale 1967, No.105) where it is dated to the last quarter of the seventh century.

Type 2: Tronco-conical bowl or lid, (cf. Perkins and Walker 1990, Fig. 32.3). D.90-430.

Type 5: Hemispherical bowl with a thickened rim and a groove in the upper surface, this example bore a handle scar, (cf. Perkins and Walker 1990, Fig. 32.5). D.220-240.

Type 7: Bowl, or possibly lid with an everted overhanging rim with groove as lid seating.

Type 9 Slightly everted rim ,(cf. Perkins and Walker 1990, Fig. 26.2). Date sixth - fifth, by analogy to a Bucchero example at Doganella (Perkins and Walker 1990, 25 Bowl 3). D. 120-180.

Type 10: Shallow bowl with an everted and slightly overhanging rim, the shape occurs at Doganella in Grey Bucchero, (cf. Perkins and Walker 1990, 26 Grey Bucchero bowl type 5, Fig. 26.5).

Type 11: Upright rim with a squared-off top and a cordon on the exterior.

Type 12: Bowl, or possibly lid with a plain everted rim.

Type 13: Shallow bowl with a beaded rim, with or without a lid seating.

Type 14: Deep bowl with a thickened rim forming an angled beading. This rim shape could possibly the neck of a jar rather than a bowl. Cf. Coarse creamware 2 bowl type 2, Fig. 6.2.2.5.*1*.

Type 15: Carinated bowl with an everted rim with a groove on the upper surface.

Type 16: Bowl or lid with an in-turned thickened rim.

Type 17: Carinated bowl with grooves on the exterior of the wall. Similar to archaic chalices dating to the mid - late seventh century (cf. Donati and Michelucci 1971, 32 No.34).

Type 18: Bowl with a broad, flat base and a slightly hooked rim with a pronounced lid seating.

Bases

Type 1: Everted and thickened foot ring, (cf. Perkins and Walker 1990, Fig. 32.8)

Type 2: Everted and rolled foot ring, (cf. Perkins and Walker 1990, Fig. 32.9-11).

Type 3: Everted and rolled foot ring with sharp exterior angle and curved lower surface, (cf. Perkins and Walker 1990, Fig. 32.12-13).

Type 4: Everted foot ring with sharp angles, (cf. Perkins and Walker 1990, Fig. 32.14-15). D.60-80.

Type 5: Hooked foot ring, (cf. Perkins and Walker 1990, Fig. 32.16). D.72-120.

Type 6: Low foot ring with a curved profile, (cf. Perkins and Walker 1990, Fig. 26.8).

Type 7: Foot ring with angular profile, (cf. Perkins and Walker 1990, Fig. 27.10).

Type 8: Disc base, (cf. Perkins and Walker 1990, Fig. 27.12).

Type 9: Thick foot ring with an angular profile.

Type	Figure	Comments	No	D.	Site
Bowl 1	-		1	260	CAP157.0
Bowl 1	-		1	320	CAP46.0
Bowl 1	-		1	220	CAP164.6
Bowl 1	-		1	190	FP114.1
Bowl 1	-		1	220	FP23.0
Bowl 1	-		1	160	FP61.1
Bowl 1	-		1	120	MAG56.1
Bowl 1	-		1	180	MAG152.2
Bowl 1	-		1	220	MAN301.0
Bowl 1	-		2	280	MAR9.0
Bowl 1	-		1	180	MAR53.2
Bowl 1	-		1	240	MAR209.0
Bowl 1	-		1	320	MAR222.0
Bowl 1	6.2.2.2.4	1 vessel	3	350	ORB35.0
Bowl 1	6.2.2.2.5	Vertical rib on exterior of rim.	1	130	ORB108.0
Bowl 1	-		1	260	ORB108.0
Bowl 1	-		1	400	ORB108.0
Bowl 1	-		1	160	ORB109.0
Bowl 1	-		1	180	PR9.0
Bowl 1	-		1	300	PR38.0
Bowl 1	-		1	280	SD141.1
Bowl 1	-		1	120	SD168.0
Bowl 1	-		1	200	TAL217.1
Bowl 2	-		1	160	CAP33.1
Bowl 2	-		1	140	CAP46.0
Bowl 2	-		1	160	CAP93.0
Bowl 2	-		1	220	CAP93.0
Bowl 2	-		1	260	CAP150.0
Bowl 2	-		2	160	COL2.0
Bowl 2	-		1	-	FP13.3
Bowl 2	-		1	280	FP13.3
Bowl 2	-		1	90	FP114.1
Bowl 2	-		1	180	LC39.1
Bowl 2	-		1	220	LC51.0
Bowl 2	-		1	260	LC51.0
Bowl 2	-		1	120	LC101.2
Bowl 2	-		1	140	LC101.2
Bowl 2	-		1	350	LC101.2
Bowl 2	-		1	-	MAG50.2
Bowl 2	-		1	-	MAG52.2
Bowl 2	-		1	120	MAR37.0
Bowl 2	-		1	180	MAR37.0
Bowl 2	-		1	160	ORB35.0
Bowl 2	-		1	160	ORB35.0
Bowl 2	-	1 vessel with a flat base	8	160	ORB35.0
Bowl 2	-	1 vessel	2	220	ORB35.0
Bowl 2	-		1	180	ORB103.0
Bowl 2	-		1	-	ORB109.0
Bowl 2	-		1	200	PF53.0
Bowl 2	-	Groove on exterior of rim	1	300	PF105.1
Bowl 2	-		1	180	PR9.0
Bowl 2	-		1	-	PR10.0
Bowl 2	-		1	100	PR14.0
Bowl 2	-		2	280	PR41.0
Bowl 2	-		1	140	PR52.0
Bowl 2	-		1	-	SAM17.0
Bowl 2	-		1	-	SAM19.0
Bowl 2	-		2	-	SAM29.3
Bowl 2	-		1	260	SAM41.1
Bowl 2	-		1	160	SAM134.0
Bowl 2	-		1	210	SAM134.0

Type	Figure	Comments	No	D.	Site
Bowl 2	-	Red slip	8	220	SD250.1
Bowl 2	-		1	200	SD261.1
Bowl 2	-		1	-	SD277.2
Bowl 2	-		1	300	TAL115.0
Bowl 2	-		1	-	TAL405.3
Bowl 2	-		1	-	TAL422.1
Bowl 5	-		1	260	LC101.2
Bowl 5	6.2.2.2.6		1	240	SAM119.3
Bowl 7	-		1	140	MAR37.0
Bowl 7	6.2.2.2.7		1	220	MAR210.2
Bowl 7	6.2.2.2.8	Burnished	1	160	ORB41.0
Bowl 7	-		1	260	SD277.2
Bowl 7	6.2.2.2.9		1	340	SD277.2
Bowl 9	-		1	140	CAP46.0
Bowl 9	-		1	-	MAN271.2
Bowl 9	-		1	180	ORB109.0
Bowl 9	-		1	140	PR27.1
Bowl 9	-		1	120	SAM130.2
Bowl 10	-		1	180	CAP150.0
Bowl 11	6.2.2.2.10		1	200	CAP159.2
Bowl 12	6.2.2.2.11		1	140	CAP46.0
Bowl 12	-		1	340	CAP46.0
Bowl 13	-		1	220	CAP46.0
Bowl 13	6.2.2.2.12		1	300	CAP46.0
Bowl 13	6.2.2.2.13		1	180	LC101.2
Bowl 13	-		1	260	MAN96.2
Bowl 13	6.2.2.2.14		2	190	MAN271.2
Bowl 13	6.2.2.2.15		1	230	SAM133.2
Bowl 14	-		1	180	SAM48.2
Bowl 15	6.2.2.2.16		1	160	CAP46.0
Bowl 15	-		5	200	CAP46.0
Bowl 15	-		1	160	CAP93.0
Bowl 15	6.2.2.2.17	Ante cocturam slashes on rim.	1	280	LC101.2
Bowl 16	6.2.2.2.18		1	280	SAM106.2
Bowl 17	6.2.2.2.19	Overfired	1	400	ORB107.0
Bowl 18	6.2.2.2.20		1	220	CAP46.0
Bowl 18	6.2.2.2.21		1	180	TAL110.1
Bowl base 1	-		1	60	FP61.1
Bowl base 1	-		2	160	PF20.2
Bowl base 1	-		1	60	PR9.0
Bowl base 1	-		1	140	SD188.3
Bowl base 1	-		1	60	TAL110.1
Bowl base 2	-		1	60	CAP89.1
Bowl base 2	6.2.2.2.22		1	115	MAR41.0
Bowl base 3	-		1	60	CAP34.0
Bowl base 3	-		1	-	CAP46.0
Bowl base 3	-		1	80	CAP46.0
Bowl base 3	-		1	220	CAP46.0
Bowl base 3	-	Post cocturam graffito 'X'	2	-	CAP89.1
Bowl base 3	-		1	70	CAP89.1
Bowl base 3	-		1	-	PR9.0
Bowl base 3	-		1	80	SAM102.2
Bowl base 3	-		1	-	SAM133.2
Bowl base 3	-		1	-	SAM134.0
Bowl base 4	-		1	60	CAP46.0
Bowl base 4	-		1	260	CAP93.0
Bowl base 4	-		1	65	MAR216.0
Bowl base 4	-		1	80	SD256.0
Bowl base 5	-	Self same slip	1	120	PR9.0
Bowl base 5	-		2	-	SAM134.0
Bowl base 6	-		1	85	PR9.0
Bowl base 7	-		2	60	CAP46.0
Bowl base 7	-		1	80	CAP46.0
Bowl base 8	-		1	140	CAP46.0
Bowl base 9	6.2.2.2.23		1	50	SAM21.3
Bowl	-		1	140	CAP73.2
Bowl	-		1	-	MAR8.0
Bowl	-		1	-	MAR10.0
Bowl	-		1	-	MAR226.0
Bowl	-		1	-	MAR222.0
Bowl	-		1	-	SAM135.0
Bowl	-		1	-	SD256.0
Total			163 Sherds		

Jars

Type 1: Plain everted rim with a varying number of grooves on the interior, cf. Fig. 6.2.2.1.*14*, (cf. Perkins and Walker 1990, Fig. 36.8-9).

Type 2: Plain everted rim with or without lid seating, (cf. Perkins and Walker 1990, Fig. 29.9-10).

Type 3: Everted and thickened rim, (cf. Perkins and Walker 1990, Fig. 29.11-15).

Type 4: Everted, thickened and rolled rim, (cf. Perkins and Walker 1990, Fig. 30.1-7).

Type 5: Everted, thickened and hooked rim, (cf. Perkins and Walker 1990, Fig. 30.8-12).

Type 6: Incurving wall with up-turned and thickened rim, (cf. Perkins and Walker 1990, Fig. 31.1).

Type 7: Simple everted rim with sharp angles, (cf. Perkins and Walker 1990, Fig. 31.2).

Type 8: Upright neck and angular everted rim, (cf. Perkins and Walker 1990, Fig. 31.3-4).

Type 13: Incurving wall with up-turned rim, (cf. Perkins and Walker 1990, Fig. 36.10-13, Coarseware 2 jar type 6).

Type 14: Everted rim thickened to the interior and exterior.

Type 15 Tall neck thickened to the interior and exterior, (cf. Coarse creamware 2 Jar type 9, Fig. 6.2.2.5.*3*).

Type 16: Incurving wall with up-turned and thickened rim, cf. Fig. 6.2.2.22.*1*, similar to type 6 (cf. Perkins and Walker 1990, Fig. 31.1).

Type 17: Everted rim with slight hook and sharp angles, (cf. type 5).

Type 18: Off-set vertical plain rim.

Type 19: Incurving wall with an off-set vertical plain rim.

Type 20: Plain vertical rim with a slight shoulder.

Type 21: Plain horizontal rim. Cf. Coarse creamware jar type 7.

Type 22: Incurving wall with up-turned rim Cf. Fig. 6.2.2.4.*3*, Coarseware 2 jar type 6, (cf. Perkins and Walker 1990, Fig. 36.10-13).

Type 23: Vertical rim thickened on the interior.

Type 24: Incurving thickened rim.

Handles

Type 1: Loop handle, (cf. Perkins and Walker 1990, Fig. 31.9).

Type 2: Lug handle, (cf. Perkins and Walker 1990, Fig. 37.8).

Bases

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 31-10.13).

Type 2: Flat base with vertical wall.

Type 3: Tall, plain foot ring.

Type 4 Simple low foot ring, cf. Fig. 6.2.2.1.*20*.

Type 5: Low foot ring with an angular profile, cf. Fig. 6.2.1.4.*12*.

Body sherds

Type 1: Body sherds of *olla a rete*. These large globular jars with type 1 rims and type 1 bases are decorated with ridges of clay disposed in a reticulate pattern, usually of squares. Although they have been found between Roselle and Tarquinia, they seem to be particularly characteristic of the valleys of the Albegna and the Fiora. Date mid seventh century (Donati and Michelucci 1981, 41 No.58).

Type 2: Body sherds decorated with a cordon smeared diagonally to appear like twisted rope fibres, (cf. Perkins and Walker 1990, Fig. 36.2-3).

Type	Figure	Comments	No	D.	Site
Jar 1	-		1	-	CAP46.0
Jar 1	-	Cf. Fig. 6.2.2.1.16	1	-	CAP46.0
Jar 1	6.2.2.2.24		1	80	CAP46.0
Jar 1	-		1	120	CAP46.0
Jar 1	-	Cf. Fig. 6.2.2.1.16	1	160	CAP46.0
Jar 1	-		1	200	CAP46.0
Jar 1	-		1	260	CAP46.0
Jar 1	-		1	200	CAP63.0
Jar 1	-		1	160	CAP73.2
Jar 1	-		1	200	CAP98.2
Jar 1	-		1	260	CAP164.6
Jar 1	-		1	140	CAP172.0
Jar 1	-		1	140	LC39.1
Jar 1	-		3	130	LC101.2
Jar 1	-		1	220	LC101.2
Jar 1	-		1	140	MAG22.2
Jar 1	-		1	240	MAG22.2
Jar 1	-		1	240	MAG22.2
Jar 1	-		1	330	MAG22.2
Jar 1	6.2.2.2.25	Wiped. Associated with 2 type 1 handles.	16	190	MAG101.0
Jar 1	-		1	180	MAN54.4
Jar 1	-		1	-	MAN88.2
Jar 1	-		1	200	MAN88.7
Jar 1	-		1	120	MAN108.0
Jar 1	-		1	200	MAN252.2
Jar 1	-		1	160	MAR8.0
Jar 1	-		1	220	MAR10.0
Jar 1	6.2.2.2.26		1	190	MAR20.1
Jar 1	-		1	200	MAR20.1
Jar 1	-		1	-	MAR21.2
Jar 1	-		1	110	MAR37.0
Jar 1	-		2	120	MAR37.0
Jar 1	-		1	160	MAR37.0
Jar 1	-		1	240	MAR39.0
Jar 1	-		1	160	MAR210.2
Jar 1	-	Wiped	1	-	ORB35.0
Jar 1	-	Associated with handle type 1	32	220	ORB35.0
Jar 1	-		1	280	ORB72.0
Jar 1	6.2.2.2.27		1	260	ORB107.0
Jar 1	-		1	160	ORB108.0
Jar 1	-		1	180	PF31.0
Jar 1	6.2.2.2.28		1	140	PF105.1
Jar 1	-	Red Slip	1	200	PR9.0
Jar 1	-		1	150	PR9.0
Jar 1	-		1	220	PR9.0
Jar 1	6.2.2.2.29		1	180	PR10.0
Jar 1	6.2.2.2.30		1	350	PR10.0
Jar 1	-		1	350	PR23.2
Jar 1	-		1	160	PR38.0
Jar 1	-		2	150	SAM51.3
Jar 1	-		1	80	SAM116.2
Jar 1	-		4	200	SAM130.2
Jar 1	-		1	250	SD168.0
Jar 1	-		1	-	SD180.0
Jar 1	-	1 vessel	20	140	SD180.0
Jar 1	-	1 vessel	2	160	SD180.0
Jar 1	6.2.2.2.31	1 vessel	26	200	SD180.0
Jar 1	-	Hand made	2	220	SD189.1
Jar 1	-		1	300	SD215.2
Jar 1	-		1	220	SD277.2
Jar 2	6.2.2.2.32		1	100	CAP46.0
Jar 2	-		8	120	CAP46.0
Jar 2	6.2.2.2.33		2	120	CAP46.0
Jar 2	-		7	140	CAP46.0
Jar 2	-		5	160	CAP46.0
Jar 2	-		2	180	CAP46.0
Jar 2	-		2	200	CAP46.0
Jar 2	6.2.2.2.34		1	240	CAP46.0
Jar 2	-		1	240	CAP46.0
Jar 2	-		1	160	CAP93.0
Jar 2	-		1	110	FP13.3
Jar 2	-		1	140	FP13.3
Jar 2	-		1	140	FP23.0
Jar 2	-		1	200	FP61.1
Jar 2	-		1	-	FP114.5
Jar 2	-		1	180	LC32.2
Jar 2	-		1	180	LC32.2
Jar 2	-		1	120	LC113.1
Jar 2	-		1	-	MAG22.2
Jar 2	-		1	80	MAG22.2
Jar 2	-		1	140	MAG22.2
Jar 2	-		1	160	MAG56.1
Jar 2	-		2	220	MAR9.0
Jar 2	-		1	-	MAR10.0
Jar 2	-		1	240	MAR10.0
Jar 2	-		1	160	MAR14.0
Jar 2	-		1	140	MAR37.0
Jar 2	-		1	160	MAR37.0
Jar 2	-		2	200	MAR8.0
Jar 2	6.2.2.2.35		1	240	MAR8.0
Jar 2	-		1	260	MAR88.0
Jar 2	-		1	220	MAR99.0
Jar 2	-		1	-	MAR209.0
Jar 2	6.2.2.2.36	Associated with base type 1	2	230	ORB35.0
Jar 2	-		1	300	ORB35.0
Jar 2	-		1	-	ORB107.0
Jar 2	-		1	220	ORB107.0
Jar 2	-		1	140	PF7.0
Jar 2	-		1	140	PF22.0
Jar 2	-		1	180	PF22.0
Jar 2	-		1	220	PR9.0
Jar 2	-		1	280	PR9.0
Jar 2	-		1	400	PR9.0
Jar 2	-		1	200	PR10.0
Jar 2	-		1	340	PR10.0
Jar 2	-		1	-	PR41.0
Jar 2	-		1	-	PR43.2
Jar 2	-		1	160	PR56.0
Jar 2	-		1	220	PR59.1
Jar 2	-		1	140	PR74.0
Jar 2	-		1	180	PR77.1
Jar 2	-		1	-	SAM51.3
Jar 2	-		1	-	SAM106.2
Jar 2	-		1	-	SAM124.2
Jar 2	-		1	-	SAM124.2
Jar 2	6.2.2.2.37		1	280	SAM133.2
Jar 2	6.2.2.2.38		1	240	SD141.1
Jar 2	-		2	240	SD141.3
Jar 2	-		1	260	SD141.3
Jar 2	-		1	200	SD168.0
Jar 2	-	Red slip	13	300	SD168.0
Jar 2	-	Red slip	1	360	SD168.0
Jar 2	-		1	140	SD174.1
Jar 2	-		1	180	SD216.1
Jar 2	6.2.2.2.39		1	180	SD216.2
Jar 2	6.2.2.2.40		1	160	SD256.3
Jar 2	-		1	140	SD262.0

Type	Figure	Comments	No	D.	Site	Type	Figure	Comments	No	D.	Site
Jar 2	-		1	180	SD262.0	Jar 4	-		3	260	CAP93.0
Jar 2	-		1	220	SD262.0	Jar 4	-		3	280	CAP93.0
Jar 2	-		1	-	TAL422.1	Jar 4	-		1	300	CAP94.0
Jar 3	-		1	350	CAP34.0	Jar 4	-		1	280	CAP95.0
Jar 3	-		4	140	CAP46.0	Jar 4	-		1	180	CAP98.2
Jar 3	6.2.2.2.41		8	160	CAP46.0	Jar 4	-		1	260	CAP99.1
Jar 3	-		2	160	CAP46.0	Jar 4	-		1	140	CAP100.0
Jar 3	-		5	180	CAP46.0	Jar 4	-		1	220	CAP159.5
Jar 3	-		1	200	CAP46.0	Jar 4	-		1	240	CAP164.2
Jar 3	6.2.2.2.42		3	220	CAP46.0	Jar 4	-		4	-	CAP164.3
Jar 3	-		1	180	CAP50.0	Jar 4	-		1	120	CAP172.0
Jar 3	-		1	140	CAP88.1	Jar 4	-		4	200	CAP172.0
Jar 3	-		3	-	CAP172.0	Jar 4	-		1	140	FP61.1
Jar 3	-		2	140	CAP172.0	Jar 4	-		1	200	FP114.1
Jar 3	-		1	280	FP31.1	Jar 4	-		1	180	LC39.1
Jar 3	-		1	180	FP61.1	Jar 4	-		1	190	MAG54.1
Jar 3	-		1	260	FP61.1	Jar 4	-		1	220	MAN88.2
Jar 3	-		1	160	FP114.1	Jar 4	-		1	180	MAN88.7
Jar 3	-		1	140	LC101.2	Jar 4	-		2	260	MAN88.7
Jar 3	-		1	180	LC101.2	Jar 4	-		1	400	MAN150.3
Jar 3	-		1	240	MAG22.2	Jar 4	-		1	160	MAN260.0
Jar 3	-		1	240	MAG83.1	Jar 4	-		1	380	MAR15.0
Jar 3	-		1	280	MAG83.1	Jar 4	-		1	200	MAR21.2
Jar 3	-		1	140	MAR10.0	Jar 4	-		1	-	MAR37.0
Jar 3	-		1	180	MAR21.2	Jar 4	-		1	140	MAR37.0
Jar 3	-		1	120	MAR37.0	Jar 4	-		4	160	MAR37.0
Jar 3	-		1	140	MAR37.0	Jar 4	-		4	180	MAR37.0
Jar 3	-		1	100	MAR210.2	Jar 4	-		3	200	MAR37.0
Jar 3	-		1	350	MAR212.0	Jar 4	-		3	220	MAR37.0
Jar 3	-		1	320	MAR222.0	Jar 4	-		2	240	MAR37.0
Jar 3	-		2	320	MAR231.0	Jar 4	-		1	320	MAR37.0
Jar 3	-		1	130	ORB35.0	Jar 4	-		1	220	MAR98.0
Jar 3	-	1 vessel	5	180	ORB35.0	Jar 4	-		1	180	ORB35.0
Jar 3	-		1	240	ORB35.0	Jar 4	-		1	200	ORB35.0
Jar 3	-		1	180	ORB40.0	Jar 4	-		1	360	ORB103.0
Jar 3	-		1	140	ORB106.2	Jar 4	-		1	340	ORB107.0
Jar 3	-		1	160	ORB107.0	Jar 4	-		1	140	ORB108.0
Jar 3	-		1	160	ORB108.0	Jar 4	-		1	140	PF17.1
Jar 3	6.2.2.2.43		2	200	PF16.2	Jar 4	-		1	350	PF17.1
Jar 3	-		1	260	PF22.0	Jar 4	-		1	340	PF53.0
Jar 3	-		1	-	PR9.0	Jar 4	-		1	140	PF121.2
Jar 3	-		1	-	PR9.0	Jar 4	-		1	-	PR9.0
Jar 3	-		1	180	PR9.0	Jar 4	6.2.2.2.44		1	70	PR9.0
Jar 3	-		1	220	PR9.0	Jar 4	-		2	120	PR9.0
Jar 3	-		1	140	PR23.2	Jar 4	-		1	140	PR9.0
Jar 3	-		1	180	PR50.0	Jar 4	-		3	150	PR9.0
Jar 3	-	Post cocturam graffito inverted 'A' on inside of rim	1	200	PR50.0	Jar 4	-		1	160	PR9.0
						Jar 4	-		1	200	PR9.0
						Jar 4	-		1	260	PR9.0
						Jar 4	-		1	320	PR9.0
Jar 3	-		1	240	PR61.1	Jar 4	-		1	240	PR10.0
Jar 3	-		1	180	SD174.1	Jar 4	-		1	340	PR10.0
Jar 3	-		1	160	SD255.5	Jar 4	-		1	-	PR19.2
Jar 3	-		1	200	SD261.1	Jar 4	-		1	120	PR19.2
Jar 3	-		1	280	SD262.0	Jar 4	-		1	180	PR19.2
Jar 3	-		1	240	SD277.2	Jar 4	-		3	230	PR24.0
Jar 3	-		1	90	TAL422.1	Jar 4	-		1	260	PR49.0
Jar 3	-		1	160	TAL423.0	Jar 4	-		1	280	PR50.0
Jar 4	-		1	180	CAP33.1	Jar 4	-		1	180	PR52.0
Jar 4	-		2	140	CAP34.0	Jar 4	-		1	-	SAM19.0
Jar 4	-		1	180	CAP34.0	Jar 4	-		1	180	SAM22.1
Jar 4	-		1	300	CAP34.0	Jar 4	-		1	-	SAM41.1
Jar 4	-		1	180	CAP43.1	Jar 4	-		1	-	SAM113.3
Jar 4	-		2	120	CAP46.0	Jar 4	-		1	240	SAM127.0
Jar 4	-		5	140	CAP46.0	Jar 4	-		1	-	SAM128.2
Jar 4	-		6	160	CAP46.0	Jar 4	-		1	200	SAM134.0
Jar 4	-		3	180	CAP46.0	Jar 4	-		1	200	SD55.0
Jar 4	-		2	200	CAP46.0	Jar 4	-		1	160	SD174.1
Jar 4	-		2	220	CAP46.0	Jar 4	6.2.2.2.45		1	180	SD174.1
Jar 4	-		1	240	CAP46.0	Jar 4	6.2.2.2.46		1	220	SD174.1
Jar 4	-		1	-	CAP88.1	Jar 4	-		1	320	SD256.0
Jar 4	-		1	220	CAP88.1	Jar 4	-		1	160	SD277.2
Jar 4	-		1	160	CAP93.0	Jar 4	-		1	200	SD277.2
Jar 4	-		1	180	CAP93.0	Jar 4	-		2	220	SD277.2

Type	Figure	Comments	No	D.	Site	Type	Figure	Comments	No	D.	Site
Jar 4	-		1	260	SD277.2	Jar 5	-		2	160	PR9.0
Jar 4	-		1	160	TAL101.3	Jar 5	-		2	240	PR9.0
Jar 4	-		1	120	TAL110.1	Jar 5	-		1	300	PR9.0
Jar 4	-		1	140	TAL110.1	Jar 5	-		1	330	PR9.0
Jar 4	-		1	160	TAL110.1	Jar 5	-	2 finger	1	350	PR9.0
Jar 4	-		1	160	TAL110.1			impressions on			
Jar 4	-		1	-	TAL115.0			outside of rim			
Jar 4	-		1	-	TAL302.2	Jar 5	-		1	130	PR10.0
Jar 4	-		1	120	TAL302.2	Jar 5	-		1	140	PR10.0
Jar 4	-		1	-	TAL422.1	Jar 5	-		1	190	PR23.2
Jar 4	-		1	120	TAL422.1	Jar 5	-		2	220	PR24.0
Jar 4	-		1	140	TAL422.1	Jar 5	-		1	260	PR27.1
Jar 4	-		1	160	TAL422.1	Jar 5	-		1	200	PR48.0
Jar 4	-		1	160	TAL422.1	Jar 5	-		1	150	PR50.0
Jar 5	-		1	260	CAP34.0	Jar 5	-		1	160	PR50.0
Jar 5	-		1	350	CAP34.0	Jar 5	-		2	160	PR50.0
Jar 5	-		1	120	CAP46.0	Jar 5	-		2	200	PR50.0
Jar 5	-		6	140	CAP46.0	Jar 5	-		1	220	PR50.0
Jar 5	-		11	160	CAP46.0	Jar 5	-		2	240	PR50.0
Jar 5	-		4	180	CAP46.0	Jar 5	-		1	160	PR52.0
Jar 5	-		5	200	CAP46.0	Jar 5	-		1	120	PR60.1
Jar 5	-		2	220	CAP46.0	Jar 5	-		1	140	PR60.1
Jar 5	-		1	160	CAP88.1	Jar 5	-		1	260	PR60.1
Jar 5	-		1	200	CAP93.0	Jar 5	-		1	300	PR60.1
Jar 5	-		2	160	CAP100.0	Jar 5	-		1	260	PR75.0
Jar 5	-		1	350	CAP100.0	Jar 5	-		1	260	PR77.1
Jar 5	-		1	-	CAP159.4	Jar 5	-		1	300	PR77.1
Jar 5	-		1	220	CAP159.4	Jar 5	-		1	260	SAM29.3
Jar 5	-		1	300	CAP159.4	Jar 5	-		1	-	SAM102.2
Jar 5	-		1	340	CAP159.4	Jar 5	-		1	320	SD141.3
Jar 5	-		1	220	CAP164.6	Jar 5	-		1	260	SD165.0
Jar 5	-		1	130	CAP172.0	Jar 6	-		1	240	MAR37.0
Jar 5	-		1	340	CAP256.0	Jar 6	-		1	380	MAR39.0
Jar 5	-		1	240	COL1.0	Jar 6	-		1	200	MAR233.0
Jar 5	-		1	180	FP4.0	Jar 7	-		2	220	FP13.3
Jar 5	-		1	200	FP114.1	Jar 7	-		1	140	FP13.3
Jar 5	-		1	-	FP114.3	Jar 7	-		2	230	MAG54.1
Jar 5	-		1	220	FP116.1	Jar 7	-		1	200	SAM106.2
Jar 5	-		1	160	LC32.2	Jar 7	-		1	160	SD174.1
Jar 5	-		1	220	LC51.0	Jar 8	-		1	200	MAG22.2
Jar 5	-		1	340	LC51.0	Jar 8	-		1	-	SAM119.3
Jar 5	-		1	240	LC101.2	Jar 8	-		1	-	SAM127.0
Jar 5	-		1	120	LC112.0	Jar 13	-		1	100	SD188.3
Jar 5	-		1	230	LC112.0	Jar 14	6.2.2.2.47		1	200	CAP46.0
Jar 5	-		1	340	MAG57.2	Jar 15	-		1	120	PR54.0
Jar 5	-		1	330	MAN77.1	Jar 16	-		5	-	CAP46.0
Jar 5	-		1	-	MAN88.2	Jar 16	-		7	120	CAP46.0
Jar 5	-		1	180	MAN103.2	Jar 16	-		13	140	CAP46.0
Jar 5	-		2	220	MAN108.0	Jar 16	-		11	160	CAP46.0
Jar 5	-		1	-	MAN151.0	Jar 16	-		3	180	CAP46.0
Jar 5	-		2	180	MAR37.0	Jar 16	-		4	200	CAP46.0
Jar 5	-		1	220	MAR37.0	Jar 16	-		2	220	CAP46.0
Jar 5	-		1	300	MAR91.0	Jar 16	-		1	240	CAP46.0
Jar 5	-		1	160	MAR99.0	Jar 16	-		1	280	CAP46.0
Jar 5	-		1	220	MAR99.0	Jar 16	-		1	140	PR32.1
Jar 5	-	1 vessel	5	270	MAR99.0	Jar 17	-		2	100	CAP46.0
Jar 5	-		1	140	MAR222.0	Jar 17	6.2.2.2.48		2	140	CAP46.0
Jar 5	-		1	400	MAR222.0	Jar 17	-		6	140	CAP46.0
Jar 5	-		1	180	MAR228.0	Jar 17	-		3	180	CAP46.0
Jar 5	-	1 vessel	6	150	ORB35.0	Jar 18	-		2	260	CAP93.0
Jar 5	-	1 vessel	2	150	ORB35.0	Jar 18	6.2.2.2.49		1	90	LC101.2
Jar 5	-	1 vessel	4	160	ORB35.0	Jar 18	-		1	140	LC101.2
Jar 5	-		2	160	ORB35.0	Jar 18	-		1	-	SAM124.2
Jar 5	-	1 vessel	3	180	ORB35.0	Jar 19	6.2.2.2.50		2	160	LC101.2
Jar 5	-	1 vessel	6	180	ORB35.0	Jar 20	6.2.2.2.51		1	160	MAR10.0
Jar 5	-	1 vessel	3	230	ORB35.0	Jar 21	6.2.2.2.52		1	340	MAG22.2
Jar 5	-		2	140	PF14.0	Jar 22	-		1	140	MAR37.0
Jar 5	-		1	320	PF17.2	Jar 22	6.2.2.2.53		1	200	SAM106.2
Jar 5	-		1	300	PF22.0	Jar 23	6.2.2.2.54		1	220	SAM106.2
Jar 5	-		1	200	PF23.0	Jar 24	6.2.2.2.55		1	160	SD156.0
Jar 5	-		1	340	PF25.0	Jar handle 1	-		1	-	CAP46.0
Jar 5	-		1	240	PF53.0	Jar handle 1	-		1	-	CAP50.0
Jar 5	-		1	260	PF53.0	Jar handle 1	-		1	-	CAP63.0
Jar 5	-		1	140	PR9.0	Jar handle 1	-		1	-	CAP91.0

Type	Figure	Comments	No	D.	Site	Type	Figure	Comments	No	D.	Site
Jar handle 1	-		1	-	CAP98.2	Jar handle 1	-		2	-	SD256.0
Jar handle 1	-		1	-	CAP99.1	Jar handle 1	-		2	-	SD256.2
Jar handle 1	-		1	-	CAP159.0	Jar handle 1	-		1	-	SD257.0
Jar handle 1	-		1	-	CAP251.1	Jar handle 1	-		1	-	SD261.0
Jar handle 1	-		1	-	CAP252.0	Jar handle 1	-		2	-	SD262.0
Jar handle 1	-		2	-	CAP253.0	Jar handle 1	-		1	-	SD277.2
Jar handle 1	-		1	-	COL1.0	Jar handle 1	-		1	-	TAL110.1
Jar handle 1	-		1	-	FP23.0	Jar handle 1	-		1	-	TAL216.2
Jar handle 1	-		1	-	FP61.1	Jar handle 1	-		1	-	TAL304.0
Jar handle 1	-		1	-	FP114.1	Jar handle 1	-		1	-	TAL405.3
Jar handle 1	-		1	-	FP114.4	Jar handle 1	-		1	-	TAL422.1
Jar handle 1	-		4	-	MAG56.1	Jar handle 2	-		1	-	CAP100.0
Jar handle 1	-		1	-	MAG58.3	Jar handle 2	-		1	-	PF14.0
Jar handle 1	-		1	-	MAG60.2	Jar base 1	-		2	60	CAP34.0
Jar handle 1	-		5	-	MAG78.1	Jar base 1	-		1	100	CAP34.0
Jar handle 1	-		2	-	MAG83.1	Jar base 1	-		2	120	CAP34.0
Jar handle 1	-		2	-	MAN72.2	Jar base 1	-		1	160	CAP34.0
Jar handle 1	-		2	-	MAN101.2	Jar base 1	-		1	40	CAP43.1
Jar handle 1	-		1	-	MAN103.2	Jar base 1	-		1	40	CAP46.0
Jar handle 1	-		1	-	MAN110.2	Jar base 1	-		3	50	CAP46.0
Jar handle 1	-		2	-	MAN113.2	Jar base 1	-		10	60	CAP46.0
Jar handle 1	-		3	-	MAN119.0	Jar base 1	-		4	70	CAP46.0
Jar handle 1	-		1	-	MAN252.2	Jar base 1	-		7	80	CAP46.0
Jar handle 1	-		1	-	MAN266.0	Jar base 1	-		5	90	CAP46.0
Jar handle 1	-		1	-	MAR6.0	Jar base 1	-		13	100	CAP46.0
Jar handle 1	-		1	-	MAR10.0	Jar base 1	-		2	110	CAP46.0
Jar handle 1	-		1	-	MAR18.0	Jar base 1	-		2	120	CAP46.0
Jar handle 1	-		1	-	MAR2.2	Jar base 1	-		1	140	CAP46.0
Jar handle 1	-		1	-	MAR20.1	Jar base 1	-		5	160	CAP46.0
Jar handle 1	-		1	-	MAR41.0	Jar base 1	-		2	300	CAP46.0
Jar handle 1	-		1	-	MAR43.0	Jar base 1	-		2	320	CAP46.0
Jar handle 1	-		5	-	MAR45.2	Jar base 1	-		2	140	CAP63.0
Jar handle 1	-		3	-	MAR99.0	Jar base 1	-		2	60	CAP73.2
Jar handle 1	-		1	-	MAR129.0	Jar base 1	-		2	70	CAP93.0
Jar handle 1	-		1	-	MAR209.0	Jar base 1	-		1	80	CAP93.0
Jar handle 1	-		1	-	MAR221.0	Jar base 1	-		2	120	CAP94.0
Jar handle 1	-		1	-	MAR222.0	Jar base 1	-		1	140	CAP100.0
Jar handle 1	-	Thumb mark	1	-	MAR222.0	Jar base 1	-		1	120	CAP150.0
Jar handle 1	-		1	-	MAR228.0	Jar base 1	-		1	100	CAP159.4
Jar handle 1	-		2	-	ORB103.0	Jar base 1	-		2	90	CAP174.0
Jar handle 1	-		1	-	ORB106.2	Jar base 1	-		1	120	CAP174.0
Jar handle 1	-		1	-	ORB108.0	Jar base 1	-		1	800	CAP174.0
Jar handle 1	-		1	-	ORB112.2	Jar base 1	-		1	160	CAP256.0
Jar handle 1	-		1	-	PF6.0	Jar base 1	-		1	200	COL1.0
Jar handle 1	-		1	-	PF17.2	Jar base 1	-		1	140	COL2.0
Jar handle 1	-		1	-	PF22.0	Jar base 1	-		3	100	FP13.3
Jar handle 1	-		1	-	PF23.0	Jar base 1	-		1	100	FP13.3
Jar handle 1	-		1	-	PF25.0	Jar base 1	-		2	120	FP13.3
Jar handle 1	-		9	-	PR9.0	Jar base 1	-		1	180	FP13.3
Jar handle 1	-		1	-	PR17.0	Jar base 1	-		2	160	FP28.0
Jar handle 1	-		1	-	PR19.0	Jar base 1	-		1	160	FP31.1
Jar handle 1	-		1	-	PR23.2	Jar base 1	-		1	80	FP61.1
Jar handle 1	-		1	-	PR24.0	Jar base 1	-		1	90	FP114.1
Jar handle 1	-		1	-	PR43.2	Jar base 1	-		1	120	FP114.1
Jar handle 1	-		1	-	PR46.2	Jar base 1	-		1	200	FP114.5
Jar handle 1	-		1	-	PR48.0	Jar base 1	-		1	80	FP116.1
Jar handle 1	-		1	-	PR52.0	Jar base 1	-		2	25	LC32.2
Jar handle 1	-		1	-	PR56.0	Jar base 1	-		1	80	LC32.2
Jar handle 1	-		1	-	PR74.0	Jar base 1	-		2	180	LC32.2
Jar handle 1	-		1	-	PR77.1	Jar base 1	-		1	100	LC39.1
Jar handle 1	-		1	-	SAM3.3	Jar base 1	-		2	-	LC101.2
Jar handle 1	-		1	-	SAM23.2	Jar base 1	-		4	80	LC101.2
Jar handle 1	-		1	-	SAM28.2	Jar base 1	-		2	100	LC101.2
Jar handle 1	-		1	-	SAM31.3	Jar base 1	-	Groove at base of wall	2	200	LC101.2
Jar handle 1	-		2	-	SAM42.0						
Jar handle 1	-		2	-	SAM47.0	Jar base 1	-		1	160	LC112.0
Jar handle 1	-		1	-	SAM102.2	Jar base 1	-		1	120	LC113.1
Jar handle 1	-		2	-	SAM134.0	Jar base 1	-		1	120	MAG20.0
Jar handle 1	-		1	-	SD141.1	Jar base 1	-		1	-	MAG22.2
Jar handle 1	-		1	-	SD141.3	Jar base 1	-		2	120	MAG22.2
Jar handle 1	-		2	-	SD174.0	Jar base 1	-		1	140	MAG22.2
Jar handle 1	-		1	-	SD180.0	Jar base 1	-		1	200	MAG24.0
Jar handle 1	-		1	-	SD215.2	Jar base 1	-		1	300	MAG78.1
Jar handle 1	-		2	-	SD250.3	Jar base 1	-		1	140	MAN54.4

Type	Figure	Comments	No	D.	Site	Type	Figure	Comments	No	D.	Site
Jar base 1	-		2	-	MAN88.2	Jar base 1	-		2	140	PR48.0
Jar base 1	-		1	100	MAN88.2	Jar base 1	-		2	100	PR49.0
Jar base 1	-		1	100	MAN88.7	Jar base 1	-		1	80	PR50.0
Jar base 1	-		1	-	MAN96.2	Jar base 1	-		3	100	PR50.0
Jar base 1	-		1	100	MAN96.2	Jar base 1	-		1	120	PR50.0
Jar base 1	-		1	-	MAN97.0	Jar base 1	-		1	120	PR52.0
Jar base 1	-	Groove at base of wall	1	220	MAN103.2	Jar base 1	-		1	140	PR52.0
Jar base 1	-		1	120	MAN108.0	Jar base 1	-		1	120	PR53.0
Jar base 1	-		1	160	MAN108.0	Jar base 1	-		1	120	PR56.0
Jar base 1	-		1	190	MAN108.0	Jar base 1	-		1	70	PR60.1
Jar base 1	-		1	80	MAN113.2	Jar base 1	-		1	100	PR60.1
Jar base 1	-		3	-	MAN119.0	Jar base 1	-		1	-	PR77.1
Jar base 1	-		1	240	MAN252.2	Jar base 1	-		2	70	PR82.2
Jar base 1	-		1	80	MAN254.0	Jar base 1	-	Groove at base of wall	3	70	PR82.2
Jar base 1	-		1	40	MAN271.2	Jar base 1	-		2	100	SAM21.3
Jar base 1	-		1	100	MAN271.2	Jar base 1	-		2	60	SAM27.2
Jar base 1	-		2	70	MAR9.0	Jar base 1	-		2	100	SAM28.2
Jar base 1	-		1	-	MAR21.2	Jar base 1	-		1	120	SAM29.3
Jar base 1	-		1	100	MAR21.2	Jar base 1	-		1	-	SAM48.2
Jar base 1	-		1	120	MAR21.2	Jar base 1	-		1	120	SAM101.2
Jar base 1	-		3	60	MAR37.0	Jar base 1	-		2	-	SAM106.2
Jar base 1	-		2	80	MAR37.0	Jar base 1	-		1	60	SAM106.2
Jar base 1	-		1	100	MAR37.0	Jar base 1	-		1	80	SAM116.2
Jar base 1	-		1	140	MAR37.0	Jar base 1	-		1	-	SAM124.2
Jar base 1	-		1	260	MAR37.0	Jar base 1	-		1	120	SAM125.2
Jar base 1	-		2	120	MAR45.2	Jar base 1	-		1	-	SAM127.0
Jar base 1	-		1	80	MAR48.0	Jar base 1	-	Post cocturam graffito	1	85	SAM127.0
Jar base 1	-		1	90	MAR70.0			'A' on base			
Jar base 1	-		1	140	MAR91.0	Jar base 1	-		1	93	SAM127.0
Jar base 1	-		1	90	MAR98.0	Jar base 1	-		2	90	SAM130.2
Jar base 1	-		1	-	MAR104.0	Jar base 1	-		3	-	SAM133.2
Jar base 1	-		1	100	MAR209.0	Jar base 1	-		3	-	SAM134.0
Jar base 1	-		1	120	MAR209.0	Jar base 1	-		1	160	SAM135.0
Jar base 1	-		4	105	MAR210.2	Jar base 1	-		1	120	SC174.1
Jar base 1	-		1	100	MAR222.0	Jar base 1	-		1	80	SD55.0
Jar base 1	-		1	140	MAR231.0	Jar base 1	-		1	140	SD141.1
Jar base 1	-		1	160	MAR231.0	Jar base 1	-		1	120	SD141.3
Jar base 1	-		2	70	ORB35.0	Jar base 1	-		1	60	SD174.1
Jar base 1	-		1	90	ORB35.0	Jar base 1	-		1	100	SD174.1
Jar base 1	-		1	95	ORB35.0	Jar base 1	-		1	180	SD174.1
Jar base 1	-		6	100	ORB35.0	Jar base 1	-		1	80	SD188.3
Jar base 1	-		1	100	ORB35.0	Jar base 1	-	Hand made	1	80	SD189.1
Jar base 1	-		2	110	ORB35.0	Jar base 1	-		1	240	SD215.2
Jar base 1	-		1	200	ORB35.0	Jar base 1	-		1	140	SD251.3
Jar base 1	-		1	230	ORB35.0	Jar base 1	-		1	160	SD263.0
Jar base 1	-	Red slip	1	80	ORB39.2	Jar base 1	-	Overfired	1	-	SD277.2
Jar base 1	-		1	80	ORB40.0	Jar base 1	-		1	-	SD277.2
Jar base 1	-	Red slip	10	120	ORB41.0	Jar base 1	-	Post cocturam graffito	1	90	SD277.2
Jar base 1	-		1	60	ORB72.0			'Z' in centre of base,			
Jar base 1	-		1	-	ORB102.0			i.e. an archaic 'S'.			
Jar base 1	-		2	80	ORB107.0	Jar base 1	-		2	100	SD277.2
Jar base 1	-		1	90	ORB108.0	Jar base 1	-		1	140	SD277.2
Jar base 1	-		1	80	PF8.0	Jar base 1	-		1	200	SD277.2
Jar base 1	-		7	85	PF16.0	Jar base 1	-		1	-	TAL110.1
Jar base 1	-		1	140	PF22.0	Jar base 1	-		1	60	TAL110.1
Jar base 1	-		2	100	PF23.0	Jar base 1	-		1	80	TAL110.1
Jar base 1	-		1	100	PF26.2	Jar base 1	-		1	70	TAL113.3
Jar base 1	-		4	80	PF102.3	Jar base 1	-		1	50	TAL115.0
Jar base 1	-		1	110	PF105.1	Jar base 1	-	Groove at base of wall	1	120	TAL115.0
Jar base 1	-		3	80	PF109.0	Jar base 1	-		1	100	TAL404.0
Jar base 1	-		1	90	PF120.0	Jar base 1	-		2	-	TAL405.3
Jar base 1	-		2	60	PF121.2	Jar base 1	-		1	80	TAL422.1
Jar base 1	-		2	90	PR9.0	Jar base 2	6.2.2.2.56		1	120	LC101.2
Jar base 1	-	Brown slip	1	100	PR9.0	Jar base 3	6.2.2.2.57		1	115	ORB35.0
Jar base 1	-		2	100	PR9.0	Jar base 4	-		3	140	MAR37.0
Jar base 1	-		1	120	PR9.0	Jar base 4	-		1	140	SD180.0
Jar base 1	-		1	220	PR9.0	Jar base 5	-		1	110	MAN54.4
Jar base 1	-		2	80	PR10.0	Jar body 1	-	Olla a rete	7	-	MAG22.2
Jar base 1	-		1	200	PR10.0	Jar body 1	-	Olla a rete	5	-	MAG50.2
Jar base 1	-		1	100	PR19.2	Jar body 1	-	Olla a rete	4	-	MAR16.0
Jar base 1	-		1	160	PR23.2	Jar body 1	-	Olla a rete	3	-	MAR20.1
Jar base 1	-		2	-	PR24.0	Jar body 1	-	Olla a rete	1	-	MAR22.2
Jar base 1	-		1	80	PR27.1	Jar body 1	-	Olla a rete	1	-	ORB39.2
Jar base 1	-		1	120	PR27.1	Jar body 1	-	Olla a rete	6	-	SD168.0

Type	Figure	Comments	No	D.	Site
Jar body 1	-	Olla a rete	3	-	SD180.0
Jar body 2	-	Rope cordon	1	-	CAP164.3
Jar body 2	-	Rope cordon	1	-	FP23.0
Jar	-		4	-	CAP100.0
Jar	-		1	140	LC101.2
Jar	-		1	160	MAN88.2
Jar	-		1	-	MAN118.2
Jar	-		1	160	ORB107.0
Jar	-		47	-	ORB41.0
Jar	-		2	320	PF24.0
Jar	-		1	-	PR9.0
Jar	-		1	220	PR9.0
Jar	-		1	-	SAM134.0
Jar	-	1 vessel	6	-	SD250.1
Total			1278 Sherds		

Jugs

Handles

Type 1: Oval section.

Type 2: Circular sectioned handle rising from rim, (cf. Perkins and Walker 1990, Fig. 37.4).

Type	Comments	Number of Sherds	Site
Jug handle 1		2	CAP93.0
Jug handle 1		1	CAP150.0
Jug handle 1		1	FP61.1
Jug handle 1		1	MAG22.2
Jug handle 1		1	MAR43.0
Jug handle 1		1	MAR99.0
Jug handle 1		1	MAR202.0
Jug handle 1		2	MAN271.2
Jug handle 1		1	PF105.1
Jug handle 1		2	PR9.0
Jug handle 1	Self same slip	1	PR52.0
Jug handle 1		1	SAM21.3
Jug handle 1		1	SAM42.0
Jug handle 2		1	CAP7.0
Jug handle 2		2	TAL110.1
Total		19 Sherds	

Lids

Type 1: Slightly thickened rim, (cf. Perkins and Walker 1990, Fig. 32.21).

Type 2: Up-turned and thickened rim.

Handles

Type 1: Roughly finished flat-topped handle, (cf. Perkins and Walker 1990, Fig. 32.20).

Type 2: Disc handle.

Type 3: Ring handle.

Type	Figure	Comments	No	D.	Site
Lid 1	-		1	70	PR9.0
Lid 1	6.2.2.2.58		1	160	PR24.0
Lid 1	-		1	140	SAM101.2
Lid 1	6.2.2.2.59	1 vessel	4	220	SD180.0
Lid 1	6.2.2.2.60		1	200	TAL110.1
Lid handle 1	-		1	30	SD174.1
Lid handle 2	-		8	-	CAP46.0
Lid handle 2	6.2.2.2.61		1	-	CAP73.2
Lid handle 2	-		1	-	CAP93.0
Lid handle 2	-		1	-	CAP159.2
Lid handle 2	-		1	-	FP23.0
Lid handle 2	-		1	-	FP102.2
Lid handle 2	-		1	-	FP31.1
Lid handle 2	-		1	40	FP61.1
Lid handle 2	-		1	70	FP61.1
Lid handle 2	6.2.2.2.62		1	-	MAG22.2
Lid handle 2	-		1	-	MAN101.2
Lid handle 2	-		1	-	MAN252.2
Lid handle 2	-		1	-	MAR129.0
Lid handle 2	-		3	-	MAR37.0
Lid handle 2	-		1	-	PF105.1
Lid handle 2	-		2	-	PF16.2
Lid handle 2	-		1	-	PF20.2
Lid handle 2	-	Ante cocturam graffito 'X'.	1	220	PR9.0
Lid handle 2	-		1	-	PR24.0
Lid handle 2	6.2.2.2.63	Ante cocturam graffito 'A'.	1	-	PR27.1
Lid handle 2	-		1	-	PR27.1
Lid handle 2	-		1	-	PR52.0
Lid handle 2	-		2	-	PR56.0
Lid handle 2	-		1	-	SAM48.2
Lid handle 2	-		1	-	SAM106.2
Lid handle 2	6.2.2.2.64		1	-	SAM115.3
Lid handle 2	-		1	-	SAM125.2
Lid handle 2	-		1	-	SAM133.2
Lid handle 2	-		1	-	SC174.1
Lid handle 2	6.2.2.2.65		1	36	SD174.1
Lid handle 2	6.2.2.2.66		1	50	SD174.1
Lid handle 2	-		1	-	SD180.0
Lid handle 2	-		1	-	SD277.2
Lid handle 2	-		2	-	TAL110.1
Lid handle 3	6.2.2.2.67		1	-	MAG22.2
Lid	-		1	-	CAP150.0
Lid	-		1	-	CAP158.0
Lid	-		1	-	FP114.1
Lid	-		1	-	MAG22.2
Lid	-		1	260	PF14.0
Lid	-		1	-	PF53.0
Lid	-		1	-	PF109.0
Lid	-		2	-	PR50.0
Lid	-		1	-	SAM106.2
Total			66 Sherds		

Plates

Type 1: Shallow plate with slight carination, cf. Impasto plate type 1 cf. Fig. 6.2.2.1.*1*.

Type 4: Shallow plate with off-set plain rim, cf. Impasto plate type 4 Fig. 6.2.2.1.*4*.

Bases

Type 1: Flat base.

Type 2: Low foot ring, cf. Fig. 6.2.2.1.*21*.

Type	Number of Sherds	D. In mm.	Site
Plate 1	2	120	CAP46.0
Plate 1	1	240	CAP46.0
Plate 1	1	200	MAR37.0
Plate base 1	1	100	CAP46.0
Plate base 2	1	120	MAR20.1
-	3	-	MAR70.0
Total	9 Sherds		

Miscellaneous

Type 1 Shoulder of a cooking stand with a perforation in the upper surface, an opening below and a finger impressed cordon at the shoulder. Probably a Scheffer type IC cooking stand (Scheffer 1987, 99). Date 1st half of seventh century.

Type 2 Shoulder sherd, probably a Scheffer type IIA cooking stand (Scheffer 1987, 99-100). Date 2nd half of seventh century - sixth century.

Type 3 Cylindrical foot, cf. Fig. 6.2.2.4.*1*.

Type 4 Rectangular shaped lug handle.

Type 5 Small *kylix* handle, (cf. Perkins and Walker 1990, Fig. 28.9).

Type 6 Circular stopper cut from a body sherd.

Type 7 A base sherd of a typical impasto shape base (cf. Fig. 6.2.2.1.*11, 20-21*) perforated *post cocturam* with a circular hole in the centre. Date mid seventh to mid sixth century.

Type 8 Body sherd incised with two horizontal lines and dots between.

Type	Figure	Comment	No	D.	Site
1 Cooking stand	6.2.2.2.68		1	400	SAM23.2
2 Cooking stand	-	Wiped	1	-	PR9.0
3 Foot	-		1	-	CAP46.0
4 Handle	6.2.2.2.69		1	-	MAR20.1
5 Kylix	-		1	-	SD180.0
6 Stopper	-		1	40	ORB35.0
7 Strainer	6.2.2.2.70		2	75	MAR9.0
8	6.2.2.2.71		1	-	MAR66.0
Total			9 Sherds		

Body Sherds

Comments	Number of Sherds	Site
	34	CAP34.0
Rope cordon	5	CAP34.0
	608	CAP46.0
	9	CAP50.0
	9	CAP73.2
	2	CAP87.0
	6	CAP88.1
	4	CAP89.1
	48	CAP93.0
	2	CAP98.2
	1	CAP99.1
	1	CAP157.0
	1	CAP158.0
	10	CAP159.2
Plain cordon	1	CAP159.2
	3	CAP159.3
	3	CAP159.4
	1	CAP159.5
	1	CAP164.2
	2	CAP164.3
	1	CAP164.5
	23	CAP172.0
	5	CAP174.0
	6	CAP253.0
Rope cordon	1	CAP253.0
	3	CAP256.0
Rope cordon	1	CAP256.0
	1	COL1.0
	18	COL2.0
	1	COL5.0
	5	FP4.0
Plain cordon	1	FP4.0
Coil built	1	FP4.0
	1	FP8.1
	42	FP13.3
Poorly fired	51	FP23.0
	1	FP25.0
	7	FP28.0
	4	FP31.1
	3	FP56.0
	13	FP61.1
	1	FP102.2
	2	FP110.0
	1	FP111.0
	30	FP114.1
	2	FP114.2
	2	FP114.3
	1	FP115.2
	18	FP116.1
	3	FP116.2
	3	LC32.2
	48	LC39.1
Plain cordon	1	LC39.1
	4	LC51.0
Plain cordon	2	LC51.0
	99	LC101.2
	5	LC112.0
	6	LC113.1
	2	LC117.0
	1	MAG17.0
	1	MAG20.0
	1	MAG22.2

Comments	Number of Sherds	Site
2 plain cordons	1	MAG22.2
Plain cordon	1	MAG4.1
	8	MAG50.2
	2	MAG54.1
	10	MAG56.1
	1	MAG78.1
	1	MAG78.2
	9	MAG83.1
	2	MAG87.2
	36	MAG152.2
Plain cordon	1	MAG152.2
Shapeless	3	MAG152.2
	4	MAG161.1
	7	MAG162.0
	2	MAN54.4
	3	MAN77.1
	26	MAN88.2
	5	MAN88.7
	3	MAN93.0
	6	MAN96.2
	7	MAN97.0
	2	MAN101.2
	3	MAN107.2
	1	MAN108.0
	1	MAN110.2
	4	MAN113.2
	1	MAN115.0
	1	MAN119.0
	1	MAN150.3
Impressed cordon	1	MAN150.3
	2	MAN151.0
	16	MAN152.2
	2	MAN157.0
	3	MAN252.2
	3	MAN254.0
	2	MAN266.0
	9	MAN301.0
	2	MAR6.0
	7	MAR8.0
	4	MAR9.0
Rope cordon	4	MAR9.0
Rope cordon	1	MAR10.0
	2	MAR31.0
	1	MAR35.2
Wiped	107	MAR37.0
	79	MAR37.0
	4	MAR39.0
Rope cordon	1	MAR39.0
	6	MAR41.0
	3	MAR43.0
	2	MAR44.0
	19	MAR45.2
	2	MAR53.2
	33	MAR70.0
	3	MAR79.0
Wiped	1	MAR88.0
	10	MAR91.0
Plain cordon	1	MAR91.0
	6	MAR98.0
	4	MAR99.0
	2	MAR101.0
	3	MAR105.0
	8	MAR119.0
	1	MAR125.0
	3	MAR20.1
	1	MAR202.0
	2	MAR209.0
Hand made	4	MAR209.0
	15	MAR210.2
	9	MAR212.0
	1	MAR215.0
	2	MAR221.0
	14	MAR222.0
	5	MAR224.0

Comments	Number of Sherds	Site
	4	MAR225.0
	2	MAR226.0
	7	MAR231.0
	6	MAR233.0
	313	ORB35.0
	2	ORB39.2
	8	ORB40.0
	3	ORB72.0
	6	ORB100.0
	19	ORB101.0
Impressed cordon	2	ORB101.0
	17	ORB102.0
	11	ORB103.0
Rope cordon	3	ORB107.0
	19	ORB107.0
	19	ORB108.0
	15	ORB109.0
	2	ORB112.2
	8	ORB113.0
	2	ORB221.0
	3	PF1.3
	1	PF6.0
	3	PF7.0
	2	PF8.0
	1	PF13.0
	7	PF14.0
	12	PF16.2
Rope cordon	1	PF16.0
	8	PF17.1
	4	PF17.2
	1	PF20.2
	1	PF22.0
Rope cordon	1	PF22.0
	2	PF23.0
Combed	1	PF23.0
Rope cordon	1	PF23.0
	1	PF24.0
	1	PF25.0
	1	PF26.2
	4	PF31.0
	1	PF36.0
	2	PF52.0
	4	PF53.0
	3	PF101.2
	5	PF102.3
	1	PF105.1
	1	PF105.2
Red slip	1	PF105.2
	3	PF106.0
Rope cordon	1	PF106.0
	2	PF107.1
	6	PF109.0
	2	PF121.2
	1	PR7.2
	60	PR9.0
Rope cordon	2	PR9.0
	58	PR10.0
Rope cordon	2	PR10.0
	3	PR14.0
	4	PR15.0
	1	PR17.0
	8	PR19.2
	16	PR23.2
	2	PR24.0
	2	PR26.2
	12	PR27.1
Plain cordon	1	PR27.1
Rope cordon	1	PR27.1
	1	PR32.1
	2	PR38.0
	2	PR40.0
	2	PR46.2
	1	PR48.0
Rope cordon	1	PR48.0
	2	PR49.0
	6	PR50.0
	4	PR52.0
	1	PR53.0
	1	PR56.0
	4	PR60.1
	2	PR61.1
	8	PR74.0
	5	PR76.1
	15	PR77.1
	3	PR80.2
	6	PR82.2
	1	SAM3.3
	1	SAM8.0
	29	SAM17.0
Plain cordon	1	SAM17.0
	1	SAM19.0
	9	SAM21.3
	4	SAM22.1
Red slip	1	SAM22.1
	3	SAM23.2
Impressed cordon	1	SAM26.0
	3	SAM27.2
	3	SAM28.2
	5	SAM29.3
	2	SAM31.3
	16	SAM41.1
	1	SAM47.0
	4	SAM48.2
	3	SAM101.2
	9	SAM102.2
	9	SAM106.2
	3	SAM107.0
	1	SAM110.0
	1	SAM111.2
	5	SAM115.3
	1	SAM116.2
	15	SAM119.3
Plain cordon	1	SAM119.3
	9	SAM124.2
	4	SAM125.2
	14	SAM127.0
Impressed cordon	1	SAM127.0
	3	SAM128.2
	14	SAM130.2
Decorated with band of - horizontal grooves, edged with cord impressions.	1	SAM130.2
	5	SAM131.0
	6	SAM133.2
Coil built	1	SAM133.2
	7	SAM134.0
Rope cordon	1	SAM134.0
	20	SAM135.0
Rope cordon	1	SAM135.0
Impressed cordon	1	SAM135.0
	2	SD54.0
Rope cordon	1	SD141.1
	5	SD141.3
	1	SD142.0
	3	SD156.0
	1	SD165.0
	19	SD168.0
Arched cord impression	4	SD168.0
	58	SD180.0
	3	SD188.3
	1	SD189.1
Hand made with rope cordon	1	SD189.1
	2	SD195.0
Rope cordon	1	SD215.2
	1	SD225.0
Red slip	4	SD250.1
Plain cordon	1	SD251.3
Rope cordon	1	SD261.0

Comments	Number of Sherds	Site
	7	SD262.0
Rope cordon	1	SD262.0
Plain cordon	1	SD262.0
	2	SD263.0
	48	SD277.2
	4	TAL101.3
	43	TAL110.1
	10	TAL113.3
	6	TAL115.0
Plain cordon	1	TAL201.2
	15	TAL216.2
	5	TAL217.1
	2	TAL302.2
	10	TAL304.0
	6	TAL402.0
	1	TAL411.0
	5	TAL419.1
	14	TAL422.1
	8	TAL425.0
Total	3049 Sherds	

Summary

Form	Number of Sherds	% of identified forms
Basins	26	1.66%
Bowls	163	10.38%
Jars	1278	81.40%
Jugs	19	1.21%
Lids	66	4.20%
Plates	9	0.57%
Miscellaneous	9	0.57%
Body sherds	3049	-
Total	4619 Sherds	

6.2.2.3 Coarseware 2: The Doganella Amphora Fabric

This same fabric was principally used to produce amphorae and is fully described in section 6.2.3.1. As this coarseware was produced at Doganella the pieces are listed in continuation of the sequence of types identified at Doganella (Perkins and Walker 1990, 38-40).

Basins

Type 1: Shallow basin with cordoned rim, (cf. Perkins and Walker 1990, Fig. 36.19). Date: sixth-fifth century.

Type 2: Plain squared-off rim with a slight ledge on the exterior (cf. Perkins and Walker 1990, Fig. 28.14), D.310-400. Date: sixth-fifth century.

Bases

Type 1: Large foot ring with a rounded profile. Similar bases were found at Casale Pian Roseto (Murray Threipland and Torelli 1970, Fig 18 Nos.12-16). D.220-280. Date: sixth-fifth century.

Bowls

Type 1: Hemispherical bowl with an incurving rim (cf. Perkins and Walker 1990, Fig. 36.16). D.180-500. Date: current throughout the Etruscan period.

Type 3: Carinated bowl with a plain rim (cf. Perkins and Walker 1990, Fig. 36.18). D.60-420. Date: ? late seventh -fifth century

Jars

Type 1: Plain everted rim with grooves on the interior, cf. Fig.6.2.2.1.*14*. (cf. Perkins and Walker 1990, Fig. 36.8-9). Date: late seventh - mid sixth century.

Type 3: Everted, thickened rim with a sinuous profile, (cf. Perkins and Walker 1990, Fig. 29.14). Date: sixth-fifth century.

Type 4: Everted, almond shaped rim profile, often with a slight overhang (cf. Perkins and Walker 1990, Fig. 30.1-7). D.140-320. Date: Late sixth-early third century

Type 5: Hooked rim with a somewhat angular profile, (cf. Perkins and Walker 1990, Fig. 30.8, 30.10-11). Date: fifth-early third century

Type 6: Incurving wall with up-turned rim, (cf. Perkins and Walker 1990, Fig. 36.10-13). Date: sixth-fifth century.

Type 7: Plain everted rim with angular profile, (cf. Perkins and Walker 1990, Fig. 31.2). D.120-320. Date: fifth century.

Type 8: Incurving wall with a collared rim and a horizontal upper surface. D. 200. . Date: ? sixth-early third century

Type 10: Large jar with an out-turned thickened rim. D.360. Date: ? sixth-fifth century.

Handles

Type 1: Loop handle of stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Type 6: Bucket handle, (cf. Murray Threipland and Torelli 1970, Fig 21G Nos.1).

Bases

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 30.13).

Jugs

Handles

Type 2: Vertical jug handle rising from rim, (cf. Perkins and Walker 1990, Fig. 37.4).

Type	Figure	Comments	No.	D.	Site
Basin 1	-		1	340	MAG162.0
Basin 2	-		1	400	CAP34.0
Basin base 1	-		1	280	CAP46.0
Basin base 1	6.2.2.3.1		1	220	CAP174.0
Basin base 1	-		1	-	MAR99.0
Bowl 1	-		8	160	ORB35.0
Bowl 1	-		1	180	ORB109.0
Bowl 3	-		1	60	CAP174.0
Jar 1	-		1	-	CAP150.0
Jar 1	-		2	240	MAR9.0
Jar 1	-		1	180	MAR225.0
Jar 1	-		1	200	ORB35.0
Jar 1	-		1	180	SD261.0
Jar 3	-		1	160	CAP159.2
Jar 4	-		1	120	ORB108.0
Jar 4	-		1	240	SD215.2
Jar 4	-		1	280	SD250.3
Jar 4	-		1	140	SD260.0
Jar 5	-		1	220	MAG22.2
Jar 5	-		1	-	MAR223.0
Jar 6	6.2.2.3.3	Brown paint marks on exterior	1	240	PF7.0
Jar 7	-		1	120	MAG54.1
Jar 7	-		1	190	MAG54.1
Jar 8	6.2.2.3.2		1	200	MAR91.0
Jar 10	6.2.2.3.4		1	360	TAL110.1
Jar handle 1	-		3	0	CAP34.0
Jar handle 1	-		2	0	CAP91.0
Jar handle 1	-		1	0	CAP100.0
Jar handle 1	-		1	0	CAP159.2
Jar handle 1	-		3	0	CAP159.2
Jar handle 1	-		1	0	CAP164.4
Jar handle 1	-		1	0	CAP174.0
Jar handle 1	-		1	0	MAG50.2
Jar handle 1	-		3	0	MAN301.0
Jar handle 1	-		2	0	MAR9.0
Jar handle 1	-		2	0	MAR16.0
Jar handle 1	-		1	0	MAR22.2
Jar handle 1	-		1	0	MAR35.2

Type	Figure	Comments	No.	D.	Site
Jar handle 1	-		1	0	MAR45.2
Jar handle 1	-		1	0	MAR48.0
Jar handle 1	-		1	0	MAR88.0
Jar handle 1	-		1	0	MAR209.0
Jar handle 1	-		2	0	ORB35.0
Jar handle 1	-		1	0	ORB107.0
Jar handle 1	-		1	0	ORB108.0
Jar handle 1	-		1	0	ORB109.0
Jar handle 1	-		2	0	SD141.3
Jar handle 1	-		1	0	SD195.0
Jar handle 1	-		2	0	SD216.2
Jar handle 1	-		1	0	SD250.2
Jar handle 1	-		1	0	SD251.3
Jar handle 1	-		3	0	SD263.0
Jar handle 1	-		1	0	SD271.0
Jar handle 1	-		1	0	TAL217.1
Jar handle 6	-		1	0	FP31.1
Jar handle 6	-		1	0	MAR223.0
Jar handle 6	-		1	0	SD188.3
Jar base 1	-		2	100	CAP34.0
Jar base 1	-		1	140	CAP34.0
Jar base 1	-		1	120	CAP164.3
Jar base 1	-		1	-	CAP256.0
Jar base 1	-		1	50	LC32.2
Jar base 1	-		1	-	MAR103.0
Jar base 1	-		1	120	MAR103.0
Jar base 1	-		1	220	MAR88.0
Jar base 1	-		2	110	ORB35.0
Jar base 1	-		3	120	ORB35.0
Jar base 1	-		1	140	ORB35.0
Jar base 1	-		1	120	SD174.1
Jar base 1	-		1	160	SD174.1
Jar base 1	-		1	180	SD250.3
Jar base 1	-		1	100	SD260.0
Jar base 1	-		1	120	SD261.0
Jar base 1	-		1	170	SD271.0
Jar	-	Plain cordon	1	0	CAP174.0
Jug handle 2	-		1	0	CAP159.2
Jug handle 2	-		1	0	CAP34.0
Jug handle 2	-		1	0	MAR87.2
-	-		10	-	CAP34.0
-	-		1	-	CAP65.1
-	-		2	-	CAP95.0
-	-		6	-	CAP100.0
-	-		4	-	CAP150.0
-	-		1	-	CAP158.0
-	-		2	-	CAP159.2
-	-		6	-	CAP159.3
-	-		1	-	CAP164.2
-	-		2	-	CAP164.3
-	-		4	-	CAP174.0
-	-		-	-	CAP256.0
-	-		2	-	FP4.0
-	-		2	-	FP23.0
-	-		1	-	FP31.1
-	-		15	-	FP114.1
-	-		5	-	FP114.2
-	-		5	-	FP114.5
-	-		1	-	LC39.1
-	-		2	-	MAG24.0
-	-		1	-	MAG50.2
-	-		2	-	MAG78.1
-	-		1	-	MAG160.2
-	-		1	-	MAG161.1
-	-		1	-	MAG162.0
-	-		4	-	MAR6.0
-	-		12	-	MAR18.0
-	-		3	-	MAR45.2
-	-	Plain cordon	1	-	MAR45.2
-	-		1	-	MAR70.0
-	-		2	-	MAR88.0
-	-		5	-	MAR103.0
-	-		1	-	MAR105.0
-	-		2	-	MAR209.0
-	-		3	-	MAR210.2
-	-		4	-	MAR222.0
-	-		51	-	ORB35.0
-	-		2	-	ORB103.0
-	-		5	-	ORB107.0
-	-		10	-	ORB108.0
-	-		2	-	ORB112.2
-	-		1	-	PF1.0
-	-		1	-	PF6.0
-	-		1	-	PF53.0
-	-		1	-	PF102.3
-	-		1	-	PF102.3
-	-		1	-	PR10.0
-	-		1	-	PR59.1
-	-		1	-	SAM134.0
-	-		1	-	SD186.1
-	-		1	-	SD216.1
-	-		2	-	SD255.0
-	-		3	-	SD256.2
-	-		3	-	SD256.4
-	-		2	-	SD260.0
-	-		1	-	SD262.0
-	-		1	-	SD262.0
-	-		4	-	SD270.0
-	-		5	-	SD271.0
-	-		1	-	TAL101.3
-	-		3	-	TAL217.1
Total			326 Sherds		

6.2.2.4 Coarse Creamware 1

Name: Coarse Creamware 1		**Code:** EG1					
Distinguishing features: Cream colour and black crystalline inclusions							
Colour: Cream - pinkish brown. 2.5YR 6/6-7.5YR 7/4		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Rough - finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: none, self-same slip or red paint							
Clay matrix: Medium - well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<4	Black	Augite	1-25	Angular	Poor	
Crystals	<4	Transparent	Sanidine	5-20	Angular	Poor	
Grit	<4	Dark red-black	-	1-10	Sub-round	Poor	
Particles	<4	Orange-brown	Grog	1-5	Sub-round	Poor	
Particles	<3	White	Lime	1-5	Sub-round	Poor	
Platelets	<2	Golden	Biotite mica	<1	Platelet	Poor	
Notes: Quantities and sizes of inclusions were variable, some pieces were quite fine but others rather coarse. Generally the quality of the fabric varied with the size of the vessel, thus pithoi contained the largest and most frequent inclusions.							

The coarse creamware is described using the system developed for Doganella (Perkins and Walker 1990, 31-3), the type numbers used conform to this scheme. This fabric was used for pottery, pithoi and amphorae.

Basins

Type 4: Basin with almond shaped rim section (cf. Perkins and Walker 1990, Fig. 28.15).

Type 5: Basin with cordoned rim, (cf. Perkins and Walker 1990, Fig. 28.16)

Type 8: Steeply sloping wall with rim thickened on the interior and exterior (cf. Perkins and Walker 1990, Fig. 29.3).

Handles

Type 1: Horizontal handle from basin, (cf. Perkins and Walker 1990, Fig. 29.8).

Base

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 29.4).

Lid

Handle

Type 1: Disc handle.

Jars

Type 4: Everted, thickened and rolled rim, (cf. Perkins and Walker 1990, Coarseware 1 Type 4, Fig. 30.5) Date late sixth-fifth century.

Type 5: Everted, thickened and hooked rim, (cf. Perkins and Walker 1990, Coarseware 1 Type 5, Fig. 38.14

Type 6: Plain everted rim with a groove on the interior, (cf. Perkins and Walker 1990, Coarseware 2 Type 1, Fig. 36.8-9).

Type 7: Plain horizontal rim, cf. Fig.6.2.2.2.*52*, Coarseware 1 jar type 21. D.330.

Type 8: Rolled and thickened rim, cf. Fig. 6.2.2.2.*38*, D.150. For the rim shape cf. Murray Threipland and Torelli 1970, Fig.19 Nos.9-10, and Coarseware 1 jar type 2.

Handles

Type 1: Loop handle from a stamnoid jar.

Type 2: Bucket handle

Bases

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 31.10-13).

Type 2: Low angular foot ring, (cf. Perkins and Walker 1990, Fig. 27.10).

Jugs

Handles

Type 1: Vertical handle from a jug.

Miscellaneous

Type 1: Cylindrical foot, perhaps from cooking stand.

Type	Figure	Comments	No	D.	Site
Basin 4	-		1	400	MAG52.2
Basin 4	-		1	380	MAG56.3
Basin 4	-	Red paint on interior and exterior of rim	1	340	PR24.0
Basin 4	-		1	380	PR24.0
Basin 4	-		1	240	SD189.1
Basin 5	-		1	360	CAP159.2
Basin 5	-		2	400	MAR39.0
Basin 8	-		1	350	MAR110.0
Basin handle 1	-		1	-	SAM22.1
Basin base 1	-		1	200	MAR127.0
Basin	-		1	-	TAL110.1
Lid handle 1	6.2.2.4.2	Post cocturam graffito 'χ' close to handle.	1	-	PF14.0
Lid handle 1	-	cf. Fig6.2.2.2.66	1	-	MAR213.0
Jar 4	-		1	220	FP114.5
Jar 4	-		1	450	PR46.2
Jar 5	-		1	140	CAP89.1
Jar 5	-		1	280	MAN119.0
Jar 5	-		1	320	MAR216.0
Jar 6	-		1	140	CAP46.0
Jar 7	-		1	330	MAG22.2
Jar 8	-		2	150	SAM102.2
Jar handle 1	-		1	-	CAP43.1
Jar handle 1	-		1	-	MAG56.3
Jar handle 1	-		1	-	MAG78.2
Jar handle 1	-		1	-	MAN115.0
Jar handle 1	-		1	-	MAN252.2
Jar handle 1	-		1	-	MAR228.0
Jar handle 1	-		1	-	PF3.2
Jar handle 1	-		2	-	PR24.0
Jar handle 1	-		1	-	PR59.1
Jar handle 1	-		1	-	SAM22.1
Jar handle 2	-		1	-	CAP65.1
Jar base 1	-		1	220	CAP46.0
Jar base 1	-		2	200	CAP174.0
Jar base 1	-		1	-	COL1.0
Jar base 1	-		1	80	MAG22.2
Jar base 1	-	Few inclusions	1	60	MAR213.0
Jar base 1	-		1	120	PR24.0
Jar base 1	-		1	90	SAM22.1
Jar base 2	-		1	50	CAP46.0
Jug handle 1	-		1	-	CAP46.0
Jug handle 1	-		1	-	CAP159.2
Jug handle 1	-		1	-	MAN260.0
Jug handle 1	-		2	-	PR9.0
Jug handle 1	-	1 dot on interior at join	1	-	PR24.0
Jug handle 1	-		1	-	PR61.1
Jug handle 1	-		1	-	TAL115.0
Miscellaneous 1	6.2.2.4.1		1	-	SD150.3
-	-		3	-	CAP34.0
-	-		7	-	CAP46.0
-	-		1	180	FP31.1
-	-		1	-	FP111.0
-	-		1	-	FP114.4
-	-		2	-	FP114.5
-	-		4	-	MAG160.2
-	-		1	-	MAN266.0
-	-		1	-	MAR88.0
-	-		1	-	MAR210.2
-	-	Few inclusions	1	-	MAR213.0
-	-		1	-	MAR216.0
-	-		1	-	ORB103.0
-	-		2	-	ORB103.0
-	-		1	-	ORB112.2
-	-		5	-	PF26.2
-	-		1	-	PF31.0
-	-		2	-	PF102.3
-	-		1	-	PR9.0
-	-		1	-	PR27.1
-	-		2	-	PR40.0
-	-	Horizontal band of brown paint on exterior	1	-	PR48.0
-	-		1	-	PR76.1
-	-		4	-	SAM22.1
-	-		3	-	SAM102.2
-	-		1	-	SAM119.3
-	-		3	-	SAM131.0
-	-		1	-	SD55.0
-	-		1	-	SD263.0
Total			108 Sherds		

6.2.2.5 Coarse Creamware 2

Name: Coarse Creamware 2			**Code:** EC34				
Distinguishing features: Cream colour with black and green crystalline inclusions							
Colour: Cream - pinkish buff. 7.5YR 7/4		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium-soft		**Resistance:** Medium-low			**Fracture:** Rough		
Manufacture Wheel		**Firing temperature:** Medium low			**Firing atmosphere:** Oxidizing		
Surface treatment: none							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<3	Transparent	Sanidine	5-10	Angular	Poor	
Grit	<4	Pink-dark red-black	Shale? / grog	5-15	Sub-angular	Poor	
Crystals	<2	Black	Augite	10	Angular	Poor	
Crystals	<2	Dark green	Augite	1	Angular	Poor	
Particles	<2	White	Lime	1	Angular	Poor	
Platelets	<6	Silvery	Mica	<1	Platelet	Poor	
Notes: Quantities of transparent crystal and grit inclusions were variable.							

Some of the sherds in this fabric were made at the kiln site at CAP46.

Basins

Type 1: Steeply sloping wall with rim thickened on the interior and exterior cf. Coarse creamware 1 basin type 8 (cf. Perkins and Walker 1990, Fig. 29.3).

Base

Type 3: Disc base, (cf. Perkins and Walker 1990, Fig. 28.1). This piece has a composite fabric, the inside of the base and through to the exterior at the centre is of a clay which contains finer inclusions and more black augite, which is harder and more resistant to abrasion than the rest of the body. This 'patching' is probably the result of over cutting when the base was turned.

Bowls

Type 1: Hemispherical bowl with a beaded rim, (cf. Perkins and Walker 1990, Fig. 26.23-24).

Type 2: Deep bowl with a thickened rim forming an angled beading. This rim shape could possibly the neck of a jar rather than a bowl.

Type 3: Tronco-conical bowl with a plain rim, (cf. Perkins and Walker 1990, Fig. 32.3).

Jars

Type 1: Everted plain rim, cf. Fig. 6.2.2.1.*14*. Date: first half of sixth century.

Type 2: Plain everted rim slightly thickened. (cf. Perkins and Walker 1990, Fig. 29.9). Date: sixth century.

Type 3: Everted and thickened rim, (cf. Perkins and Walker 1990, Fig. 29.12). Date: sixth century.

Type 4: Everted, thickened and rolled rim, (cf. Perkins and Walker 1990, Fig. 30.3). Date: late sixth -early third century.

Type 5: Everted, thickened and hooked rim, (cf. Perkins and Walker 1990, Fig. 30.11). Date: fifth -early third century.

Type 6: Rolled, thickened and hooked rim, (cf. Perkins and Walker 1990, Fig. 40.12). Date: sixth-fifth century.

Type 7: Thickened and slightly rolled rim, (cf. Perkins and Walker 1990, Fig. 31.16). Date: fifth century.

Type 8: Everted and slightly thickened rim occurring with jar handle 2. D.100-200. Date: sixth-early third century.

Type 9: Tall neck thickened to the interior and exterior. D.180. Date: fifth-early third century.

Handles

Type 1: Loop handle of stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Type 2: Circular sectioned handle rising from rim, (cf. Perkins and Walker 1990, Fig. 37.4).

Type 3: Bucket handle, (cf. Murray Threipland and Torelli 1970, Fig 21G Nos.1).

Bases

Type 1: Simple flat base, (cf. Perkins and Walker 1990, Fig. 30.13).

Type 2: Foot ring with an angular profile, cf. Fig 6.2.1.4.*12*.

Handles

Type 1: Handle with an oval section.

Lid

Type 1: Disc shaped lid handle.

Type	Figure	Comments	No	D.	Site
Basin 1	-		1	-	ORB106.2
Basin 1	-		1	-	TAL422.1
Basin base 3	-	See text.	2	160	FP116.1
Bowl 1	-		1	180	CAP46.0
Bowl 2	6.2.2.5.1		1	120	CAP46.0
Bowl 3	-		1	100	CAP46.0
Bowl	-		1	140	CAP46.0
Handle 1	-		2	-	CAP33.1
Handle 1	-		2	-	CAP46.0
Handle 1	-		1	-	SD150.3
Handle 1	-		1	-	SD188.3
Handle 1	-		1	-	SAM21.3
Jar 1	-		1	200	PF1.3
Jar 1	-		1	200	PR9.0
Jar 1	-		1	180	PR10.0
Jar 2	-		1	180	PF16.2
Jar 3	-		1	150	PR27.1
Jar 4	-		1	140	CAP46.0
Jar 4	-		1	120	CAP93.0
Jar 4	-		2	160	PR27.1
Jar 5	-		1	-	SAM102.2
Jar 6	-		1	100	PR27.1
Jar 7	-		1	400	MAR210.2
Jar 8	-		2	100	CAP46.0
Jar 8	-		3	120	CAP46.0
Jar 8	-		2	140	CAP46.0
Jar 8	6.2.2.5.2		4	160	CAP46.0
Jar 8	-		1	200	CAP46.0

Type	Figure	Comments	No	D.	Site	Type	Figure	Comments	No	D.	Site
Jar 9	6.2.2.5.3		1	180	CAP46.0	-	-		1	-	CAP73.1
Jar handle 1	-		3	-	CAP46.0	-	-		6	-	CAP253.0
Jar handle 1	-		1	-	PF53.0	-	-		6	-	CAP253.0
Jar handle 1	-		1	-	PR9.0	-	-		1	-	FP116.1
Jar handle 1	-		1	-	PR15.0	-	-		1	-	MAR210.2
Jar handle 1	-		1	-	PR50.0	-	-		1	-	ORB41.0
Jar handle 2	-		8	-	CAP46.0	-	-		1	-	PF7.0
Jar handle 3	-		2	-	PF16.2	-	-		1	-	PF16.2
Jar base 1	-		1	32	CAP46.0	-	-		1	-	PF23.0
Jar base 1	-		1	40	CAP46.0	-	-		1	-	PF52.0
Jar base 1	-		1	65	CAP46.0	-	-		2	-	PF53.0
Jar base 1	-		3	80	CAP46.0	-	-		1	-	PF107.1
Jar base 1	-		5	100	CAP46.0	-	-		9	-	PR9.0
Jar base 1	-		1	120	CAP46.0	-	-		1	-	PR10.0
Jar base 1	-		3	140	CAP46.0	-	-		1	-	PR15.0
Jar base 1	-		1	220	CAP46.0	-	-		6	-	PR19.2
Jar base 1	-		1	160	PF22.0	-	-		3	-	PR23.2
Jar base 1	-		1	120	PR9.0	-	-		3	-	PR24.0
Jar base 1	-		1	160	PR15.0	-	-		11	-	PR27.1
Jar base 1	-		1	80	PR27.1	-	-		1	-	PR48.0
Jar base 1	-		1	240	PR27.1	-	-		3	-	PR50.0
Jar base 2	cf. Fig.6.2.1.4.12		2	100	PF16.2	-	-	Impressed cordon	1	-	PR56.0
Lid handle 1	cf. Fig.6.2.2.2.66		1	-	PR56.0	-	-		4	-	PR60.1
-	-		3	-	CAP34.0	-	-		2	-	SAM124.2
-	-		34	-	CAP46.0	-	-		1	-	SD277.2
			5			**Total**			498 Sherds		

6.2.2.6 Coarseware 3

Name: Coarseware 3	**Code:** ET3	
Distinguishing features: Pinkish buff - grey colour		
Colour: Pinkish buff-grey 5YR 5/4-7/6	**Texture:** Rough	**Strength:** Medium
Hardness: Medium	**Resistance:** Medium	**Fracture:** Finely irregular
Manufacture Wheel	**Firing temperature:** Medium	**Firing atmosphere:** Mixed
Surface treatment: none		
Clay matrix: Medium elutriated		

Inclusions:

Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Grog	<2	Pinkish orange - grey brown	Grog	10	Sub-round	Poor	rarely up to 12 mm.
Grit	<2	Brown-black	-	2	Sub-round	Poor	
Crystals	<1	Transparent	Quartz	1	Angular	Good	
Particles	<1	White	Lime	1	Sub-round	Poor	
Crystals	<0.5	Black	Augite?	<1	Angular	Good	
Platelets	<<0.5	Golden	Biotite mica	<1	Platelet	Poor	

This fabric was most commonly used at Doganella for producing tiles, but vessels were also built of this clay. The fabric has been published as Doganella coarseware 3 and Doganella Tile fabric 1 (Perkins and Walker 1990, 40, 48). See section 6.2.5.4, Tile fabric 1.

Body Sherds

Number	Site
3	SD270.0
3 Sherds	**Total**

6.2.2.7 Coarseware 4

Name: Coarseware 4	**Code:** ET6	
Distinguishing features: Shale inclusions		
Colour: Pinkish buff-orange brown-grey 2.5YR 6/8-10YR 5/2	**Texture:** Rough and powdery	**Strength:** Medium
Hardness: Medium	**Resistance:** Medium	**Fracture:** Rough
Manufacture Wheel	**Firing temperature:** Medium	**Firing atmosphere:** Mixed
Surface treatment: none		
Clay matrix: Medium elutriated		

Inclusions:

Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Grit	<2	Dark red-brown	?Shale	20	Sub-angular	Poor	
Crystals	<0.5	Transparent	Quartz	2	Angular	Poor	
Particles	<1	White	Lime	1	Sub-round	Poor	
Grit	<2	Dark red-black	-	2	Sub-round	Poor	

This rare fabric has been published as Doganella coarseware 4 (Perkins and Walker 1990, 40).

Body Sherds

Number	Site
3	LC101.2
1	SD256.3
4 Sherds	**Total**

6.2.2.8 Coarseware 5

The fabric published as Doganella coarseware 5 (Perkins and Walker 1990, 41) only occurs outside of the city as tile and pithos (see section 6.2.4.6).

6.2.2.9 Coarse Creamware 3

Name: Coarse Creamware 3			**Code:** EC23				
Distinguishing features: Colour and white crystalline inclusions							
Colour: Pinkish buff-orange 2.5YR 6/8	**Texture:** Rough		**Strength:** Medium				
Hardness: Medium	**Resistance:** Medium		**Fracture:** finely irregular				
Manufacture Wheel	**Firing temperature:** Medium		**Firing atmosphere:** Oxidizing				
Surface treatment: none, self-same slip							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<1	Transparent	Quartz / Sanidine	5	Angular	Poor	
Grit	<1.5	Dark red-brown	Grog	2-5	Angular	Poor	
Crystals	<1	Dark red-black	Augite	2-5	Angular	Poor	
Particles	<0.5	White	Lime	1-3	Sub-angular	Poor	
Crystals	<1	White	Quartz	2	Angular	Poor	
Platelets	<0.5	Golden	Biotite mica	<1	Platelet	Poor	
Notes: The fabric is very similar to amphora fabric 2							

This fabric is very similar to amphora fabric 2 which was used to make Etruscan amphorae. The fabric presumably dates to the same period as the amphorae: between the late 7th and the early 4th centuries.

Plates

Type 1: Shallow plate with plain rim, cf. Fig. 6.2.2.1.*1*. Date: ? late sixth to early fourth century.

Jars

Type 2: Plain everted rim, (cf. Perkins and Walker 1990, Fig. 29.9). Date: ? late sixth.

Type 4: Everted, thickened and rolled rim, (cf. Perkins and Walker 1990, Fig. 30.5). Date: ? late sixth to early fourth century.

Type 18: Off-set vertical plain rim, cf. Fig. 6.2.2.2.*49* Date: ? fifth-early fourth century.

Type 25: Everted, out-turned rim with an angular cordon. Date: ? fifth-early fourth century.

Type	Figure	Number of Sherds	D. in mm.	Site
Plate 1	6.2.2.9.1	4	240	FP114.1
Jar 2	-	1	160	FP13.3
Jar 4	-	1	180	MAR10.0
Jar 18	-	1	320	MAR70.0
Jar 25	6.2.2.9.2	1	120	CAP46.0
-	-	1	-	CAP46.0
-	-	2	-	FP13.3
Total		11 Sherds		

6.2.2.10 Coarseware 6

Name: Coarseware 6			**Code:** EC25				
Distinguishing features: Sandy, orange - brown colour with black crystalline inclusions							
Colour: Orange - dark red - brown - black. 2.5YR 5/6-8	**Texture:** Rough		**Strength:** Medium				
Hardness: Medium	**Resistance:** Medium		**Fracture:** Rough				
Manufacture Wheel	**Firing temperature:** Low		**Firing atmosphere:** Mixed				
Surface treatment: none							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<3	Yellowish transparent	Quartz	20-25	Angular	Poor	
Crystals	<2	Black	Augite	5-20	Angular	Poor	
Particles	<3	Orange	Grog	1	Sub-round	Poor	
Grit	<4	Dark red-brown	?	1	Sub-round	Poor	
Particles	<3	White	Lime	<1	Sub-angular	Poor	
Notes: A very sandy and orange-brown in colour similar to coarseware 1 but with inclusions of black augite.							

This fabric is similar to Coarseware 1 but with the addition of black augite. The fabric was possibly made at site FP116.1 where a waster in a similar fabric was found. The localised distribution tends to support this hypothesis.

Bowls

Type 2: Tronco-conical bowl, (cf. Perkins and Walker 1990, Fig. 32.3). Date: current throughout the Etruscan period.

Jars

Type 2: Everted, thickened and hooked rim, (cf. Perkins and Walker 1990, Fig. 29.9). Date: seventh-sixth century.

Type 7: Simple everted rim with sharp angles, (cf. Perkins and Walker 1990, Fig. 31.2). Date fifth century?

Handle

Type 1: Loop handle from a stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Base

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 31.10-13).

Type	Number of Sherds	D. in mm.	Site
Bowl 2	1	160	FP13.3
Bowl 2	1	180	FP13.3
Bowl 2	1	260	FP13.3
Jar 2	1	160	FP13.3
Jar 7	1	180	FP13.3
Jar handle 1	1	-	MAR209.0
Jar base 1	2	100	FP116.1

-	10	-	FP116.1	-	8	-	FP13.3
-	2	-	FP61.1	**Total**	28 Sherds		

6.2.2.11 Coarseware 7

Name: Coarseware 7			**Code:** EC38				
Distinguishing features: Bright pinkish orange colour							
Colour: Bright pinkish orange.		**Texture:** Medium			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Rough		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: none, wiped							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<2	Whitish transparent	Quartz	10-20	Angular	Poor	
Particles	<2	Yellowish white	Lime	1-5	Sub-angular	Poor	
Particles	<2	Orange-brown	Grog	1-2	Sub-round	Poor	
Notes: Similar to coarseware 1.							

The vessel forms suggest that this is an Archaic coarseware fabric.

Bowl

Type 2: Tronco-conical bowl with a plain rim, (cf. Perkins and Walker 1990, Fig. 32.3).

Jars

Type 1: Plain everted rim with grooves on the interior, cf. Fig. 6.2.2.2.25.

Type 2: Plain everted rim, (cf. Perkins and Walker 1990, Fig. 29.9).

Jug

Type 2: Plain everted rim similar to Jar type 2 (cf. Perkins and Walker 1990, Fig. 29.9) but with a circular sectioned handle rising from the rim.

Type	Figure	Comment	No.	D. in mm.	Site
Bowl 2	-		1	200	PF105.1
Jar 1	-		1	200	MAN301.0
Jar 2	-		1	160	PF7.0
Jar base 1	-		1	110	PF7.0
Jar base 1	-		1	70	PF56.0
Jar base 1	-		1	140	PF105.1
Jar base 1	-		1	-	MAR88.0
Jug 2	6.2.2.11.1		1	110	MAN266.0
Jug	-		2	-	PF105.1
-	-	Self same slip	3	-	CAP7.0
-	-		2	-	CAP46.0
-	-		1	-	MAN54.4
-	-		3	-	MAN301.0
-	-		5	-	PF7.0
-	-		1	-	PF17.1
Total			25 Sherds		

6.2.2.12 Coarseware 8

Name: Coarseware 8			**Code:** EC41				
Distinguishing features: Soapy feel and mica inclusions							
Colour: Dark orange brown		**Texture:** Smooth			**Strength:** Medium		
Hardness: Medium		**Resistance:** High			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Low			**Firing atmosphere:** Oxidizing		
Surface treatment: none							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Platelets	<0.5	Silvery	Mica	20	Platelet	Poor	
Grit	<0.5	Dark red	?	3	Sub-round	Poor	
Notes:							

Coarseware 8 was extremely rare in the survey area.

Jar

Base

Type 1: Flat base, (cf. Perkins and Walker 1990, Fig. 31.10-13).

Type	Number of Sherds	D. in mm.	Site
Jar base 1	1	50	PR48.0
Total	1 Sherd		

6.2.2.13 Coarseware 9

Name: Coarseware 9			**Code:** EC30				
Distinguishing features: Angular white inclusions							
Colour: Pinkish brown-orange		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Rough		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Mixed		
Surface treatment: none							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Flakes	<2	White	Quartz?	10	Angular	Poor	
Particles	<2	Dark red	?	10	Sub-round	Poor	
Crystals	<2	Transparent	Quartz?	5	Angular	Poor	
Particles	<2	White	Lime	2	Sub-round	Poor	

Notes: Similar to coarseware 1 but with angular white inclusions.

Jar

Type 1: Plain everted rim with a varying number of grooves on interior, cf. Fig. 6.2.2.1.14, (cf. Perkins and Walker 1990, Fig. 36.8-9). Date: 7th-mid-6th century.

Type	Number of sherds	D. in mm.	Site
Jar 1	1	80	LC101.2
-	3	-	FP13.3
-	4	-	FP23.0
-	1	-	FP61.1
-	8	-	LC101.2
-	1	-	PR48.0
Total	18 Sherds		

6.2.2.14 Coarseware 10

Name: Coarseware 10			**Code:** EC39				
Distinguishing features: Shale inclusions							
Colour: Purplish grey brown		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium		**Resistance:** High			**Fracture:** Hackly		
Manufacture Wheel?		**Firing temperature:** Medium			**Firing atmosphere:** Mixed		
Surface treatment: Wiped							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Grit	<5	Dark red-black	Shale	50	Sub-angular	Poor	

Jar

Type 2: Plain everted rim with or without lid seating, (cf. Perkins and Walker 1990, Fig. 29.9-10). Date: seventh-sixth century.

Type 6: Incurving wall with up-turned and thickened rim, (cf. Perkins and Walker 1990, Fig. 31.1). D. 200-400. Date: sixth-fifth century.

Jug

Handle

Type 1: Oval section.

Type	Number of Sherds	D. in mm.	Site
Basin	1	350	CAP46.0
Jar 2	1	200	TAL115.0
Jar 6	1	200	TAL115.0
Jug handle 1	1	-	SD277.2
-	1	-	CAP89.1
-	1	-	SAM48.2
Total	6 Sherds		

6.2.2.15 Coarseware 11

Name: Coarseware 11			**Code:** EC21				
Distinguishing features: Colour							
Colour: Dark pinkish orange		**Texture:** Medium			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Finely irregular, laminar		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: Light red slip on exterior							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<1	Greyish brown transparent	Quartz?	20	Angular	Poor	
Particles	<0.5	White	Lime	3	Angular	Poor	
Grit	<0.5	Dark red-black	?	3	Angular	Poor	
Platelets	<0.5	Silvery	Mica	<1	Platelet	Poor	
Notes: Interior prone to spalling.							

The example from MAR303.6 may be dated to 650-550 by association with the tomb typology.

Jar

Type 1: Globular jar with plain everted rim with a varying number of grooves on the interior, cf. Fig. 6.2.2.1.*14*, (cf. Perkins and Walker 1990, Fig. 36.8-9). Date: seventh-mid-sixth century .

Type	Figure	Comments	No.	D.	Site
Jar 1			3	140	CAP7.0
Jar 1	6.2.2.15.1	Buff slip on the exterior. Interior badly spalled.	2	70	MAR303.6
Total			5		

6.2.2.16 Coarseware 12

Name: Coarseware 12			**Code:** EC37				
Distinguishing features: Colour							
Colour: Bright pinkish orange		**Texture:** Smooth			**Strength:** Strong		
Hardness: Medium-high		**Resistance:** High			**Fracture:** Chonchoidal		
Manufacture Wheel		**Firing temperature:** High			**Firing atmosphere:** Oxidizing		
Surface treatment: Thick flesh pink slip on interior and exterior							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<0.5	Greyish transparent	Quartz?	3	Angular	Poor	
Particles	<1	White	Lime	5	Sub-round	Poor	With reaction rims
Particles	<1	Dark red-black	Grog	10	Sub-round	Poor	
Platelets	<1	Golden	Biotite mica	1	Platelet	Poor	

This coarseware appears to be exclusively Archaic.

Jars

Type 1: Plain everted rim with a varying number of grooves on interior, cf. Fig. 6.2.2.1.*14*, (cf. Perkins and Walker 1990, Fig.36.8-9). Date:7th-mid-6th century.

Type 2: Plain everted rim with or without lid seating, (cf. Perkins and Walker 1990, Fig. 29.9-10). Date: seventh-sixth century.

Type	Comments	No. Sherds	D.	Site
Jar 1		1	160	CAP174.0
Jar 2		1	140	PR41.0
-	Pink slip on interior	2	-	PF14.0
-		1	-	PF14.0
-		1	-	PR9.0
Total		6 Sherds		

6.2.2.17 Coarseware 13

Name: Coarseware 13		**Code:** EC18					
Distinguishing features: Grey grit inclusions							
Colour: Pinkish orange-grey, 2.5YR 6/8-7.5YR 7/4		**Texture:** Rough			**Strength:** Weak		
Hardness: Medium-high		**Resistance:** Medium-low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Mixed		
Surface treatment: None							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<2	Transparent	Quartz?	10	Angular	Poor	
Grit	<2	Grey	?	1-15	Sub-angular	Poor	
Particles	<2	Orange	Grog	2-10	Sub-round	Poor	
Platelets	<1	Golden	Biotite mica	<5	Platelet	Poor	

This coarseware appears to be exclusively Archaic.

Bowls

Type 1: Hemispherical bowl, sometimes with a slightly incurving rim, (cf. Perkins and Walker 1990, Fig. 32.1-2, 36.16). Date: seventh-sixth century.

Jars

Type 1: Plain everted rim with a varying number of grooves on the interior, cf. Fig. 6.2.2.1.*14*, (cf. Perkins and Walker 1990, Fig. 36.8-9). Date: seventh-mid-sixth century.

Handle

Type 1: Loop handle, (cf. Perkins and Walker 1990, Fig. 31.9).

Type	Number of Sherds	D. in mm.	Site
Bowl 1	1	140	ORB109.0
Jar 1	1	180	LC51.0
Jar handle 1	1	-	ORB107.0
-	7	-	ORB107.0
-	1	-	ORB109.0
-	5	-	PR9.0
Total	16 Sherds		

6.2.2.18 Coarseware 14

Name: Coarseware 14		**Code:** EC5					
Distinguishing features: Poorly fired							
Colour: Orange brown 10R 6/8		**Texture:** Rough, powdery			**Strength:** Weak		
Hardness: Low		**Resistance:** Low			**Fracture:** Rough		
Manufacture -		**Firing temperature:** Low			**Firing atmosphere:** Mixed		
Surface treatment: None							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystals	<1	Transparent	Quartz?	1	Angular	Poor	
Grit	<3	Brown-black	?	5	Sub-round	Poor	
Particles	<3	White	Lime	2	Sub-round	Poor	
Voids	<10	-	Organic	-	-	Poor	Grass stems?

Coarseware 14 designates fragments of burnt clay.

Type	Comments	No.	Site
Cooking stand		2	MAN159.0
Cooking stand		2	ORB102.0
-		1	FP23.0
-		1	MAR210.2
-	? Kiln bricks	3	ORB107.0
-		1	PF14.0
-	Cane impressions	1	SAM23.2
-		2	SD216.2
-	? Kiln brick	1	SD251.0
-		8	SD255.0
-		1	SD256.5
-		10	SD257.2
Total		33 Pieces	

6.2.2.19 Coarseware 15 (Amphora fabric 15)

Name: Coarseware 15		**Code:** ET9					
Distinguishing features: Black particles							
Colour: Dark red 2.5YR 6/6		**Texture:** Rough			**Strength:** High		
Hardness: Medium-high		**Resistance:** Medium-high			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** High			**Firing atmosphere:** Mixed		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<1	White	Lime	3	Angular	Poor	

Particles	<2	Black	?	5	Rounded	Good	
Notes: Fabric also occurs as amphora fabric 15							

Jar

Type 21: Plain horizontal rim. Cf. Coarse creamware 1 jar type 7 and Fig. 6.2.2.2.*52*. Date: ?Mid seventh-sixth century

Handle

Type 1: Loop handle of stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Type	Number of Sherds	D. in mm.	Site
Jar 21	1	200	SD168.0
Jar handle 1	1	-	SD141.3
-	1	-	CAP93.0
-	1	-	FP23.0
-	1	-	LC113.1
-	1	-	MAN152.2
-	1	-	MAR37.0
-	1	-	MAR45.2
-	1	-	PR9.0
-	1	-	SAM41.1
-	4	-	SD174.1
-	2	-	SD186.1
-	1	-	SD250.1
-	1	-	SD250.3
-	1	-	SD262.0
Total	19 Sherds		

6.2.2.20 Coarseware 16 (Amphora fabric 9)

See amphora fabric 9 (EA16) section 6.2.3.2. This fabric is the same as amphora fabric 9 and similar to coarse creamware 1.

Jars

Handles

Type 1: Loop handle of stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Type	Number of Sherds	Site
Jar handle 1	1	PR38.0
Jar handle 1	1	PR52.0
Jar handle 1	1	PR50.0
Total	3 Sherds	

6.2.2.21 Coarseware 17 (Amphora fabric 4)

See amphora fabric 4 (EA9), section 6.2.3.2.

Jars

Handles

Type 1: Loop handle of stamnoid jar, (cf. Perkins and Walker 1990, Fig. 31.9).

Type	Number of Sherds	Site
Jar handle 1	1	CAP46.0
Total	1 Sherds	

6.2.2.22 Wasters

This group is used for sherds which were clearly overfired or deformed, where the original fabric was identifiable it is given in the table below.

Bowls

Type 1: Shallow bowl with sharp carination and flaring rim, cf. Fig. 6.2.2.1.*11*, cf. Impasto bowl type 9. Paralleled in Montanari (1929), Pl.10 No.4. Date mid seventh century.

Type 15: Carinated bowl with an everted rim with a groove on the upper surface, cf. Fig. 6.2.2.2.*16*.

Jars

Type 2: Plain everted rim with or without lid seating, (cf. Perkins and Walker 1990, Fig. 29.9-10).

Type 16: Incurving wall with up-turned and thickened rim, similar to type 6 (cf. Perkins and Walker 1990, Fig. 31.1).

Type 17: Everted rim with slight hook and sharp angles, cf. Fig. 6.2.2.2.*48*, (cf. type 5).

Type	Figure	Comments	No	D.	Site
Bowl 15	-		1	200	CAP46.0
Impasto bowl 9	-		1	-	LC39.1
Jar 2	-		1	-	CAP46.0
Jar 16	6.2.2.22.1		2	100	CAP46.0
Jar 17	-		2	140	CAP46.0
-	-	Waster Coarseware 1	1	-	FP28.0
-	-	Waster Coarseware 1	2	-	FP116.1
-	-	Waster Coarseware 6	1	-	FP116.1
-	-	Waster Coarseware 1	1	-	LC32.2
-	-	Waster Coarse Creamware 2?	1	-	PF53.0
-	-	Pot wasters	3	-	SD174.1
-	-		1	120	CAP46.0
-	-		1	-	SD189.1
-	-		4	-	SD216.2
Total			22 Sherds		

6.2.3. Amphorae

6.2.3.1 Doganella Amphorae

Name: Doganella Amphora fabric	**Code:** EA4	
Distinguishing features: Colour and inclusions		
Colour: Light red-orange-grey 2.5YR 6/8-6/6 7.5YR 6/2-5/2 5YR 5/3. Core often grey.	**Texture:** Rough, powdery	**Strength:** Medium-high
Hardness: Medium	**Resistance:** Medium	**Fracture:** Finely irregular
Manufacture Wheel-hand	**Firing temperature:** Medium	**Firing atmosphere:** Mixed
Surface treatment: None		
Clay matrix: Well elutriated		

Inclusions:

Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Crystal	<1	Transparent	Quartz?	5	Angular	Poor	
Particles	<5	Orange	Grog	5	Rounded	Poor	
Particles	<1	White	Lime	3	Sub-round	Poor	
Particles	<0.5	Brown	?	3	Rounded	Good	
Voids	<5	-	-	<3	Rounded	Poor	
Crystal	<0.5	Black	Augite	1	Angular	Poor	
Platelets	<0.5	Golden	Biotite mica	1	Platelet	Good	

Notes: The colour the fabric and the sizes of the more common inclusions were variable.

This amphora fabric was produced at the city at Doganella in the Lower Albegna Valley (Perkins and Walker 1990, 41-4).

Amphorae

Type 1: Amphora with no distinct neck, a simple rolled or slightly hooked rim wand the handle attached close

to the rim, (cf. Perkins and Walker 1990, Fig. 38.1-4).

Type 2: Amphora with a distinct neck and a variety of rim types: A) large rolled (cf. Perkins and Walker 1990, Fig. 38.5), B) slightly hooked (cf. Perkins and Walker 1990, Fig. 38.6-10), D.140-200, C) extremely hooked (cf. Perkins and Walker 1990, Fig. 38.11-15), D.140-250).

Type 3: Amphora with rim out-turned at neck and thickened (cf. Perkins and Walker 1990, Fig. 38.16-17), D.140-240.

Type 4: Amphora with no neck and shoulder incurving to a thickened up-turned rim, (cf. Perkins and Walker 1990, Fig. 38.18, 39.1).

Type 5: Amphora with a distinct flaring neck and rolled rim, frequently with a lid or stopper seating, with various rims: A) rolled and thickened (cf. Perkins and Walker 1990, Fig. 39.2-4), D.130-200, B) rolled and thickened with almond shaped section (cf. Perkins and Walker 1990, Fig. 39.5-10), D.132-300, C) rolled, thickened and hooked, (cf. Perkins and Walker 1990, Fig. 39.11-16), D.130-200.

Handles

Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Bases

Type 4: Flat base (cf. Perkins and Walker 1990, Fig. 40.10).

Type	Comments	No.	D.	Site
Type 1		1	160	MAR6.0
Type 1		1	150	MAR6.0
Type 2A		1	160	CAP92.0
Type 2A		1	140	MAG162.0
Type 2A		1	140	MAR6.0
Type 2A		1	180	MAR15.0
Type 2A		1	160	TAL110.1
Type 2B		2	200	MAG22.2
Type 2B		1	180	MAG162.0
Type 2B		1	200	MAR101.0
Type 2B		1	200	SD260.0
Type 2B		1	180	SD261.0
Type 2B		1	180	SD271.0
Type 2B		1	140	SD271.0
Type 2C		1	250	CAP100.0
Type 2C		1	180	CAP159.2
Type 2C		2	190	CAP164.1
Type 2C		1	160	COL2.0
Type 2C		1	180	FP31.1
Type 2C		1	260	MAG22.2
Type 2C		1	140	MAR6.0
Type 2C		1	160	MAR6.0
Type 2C		1	180	MAR6.0
Type 2C		1	180	MAR45.2
Type 2C		2	200	ORB35.0
Type 2C		1	200	PF25.0
Type 2C		1	200	SD174.1
Type 3		1	140	CAP164.6
Type 3		1	240	MAR10.0
Type 3		1	220	MAR101.0
Type 3		1	180	SD270.0
Type 4		1	180	MAR99.0
Type 5A		1	200	CAP164.6
Type 5A		2	140	MAR9.0
Type 5A		2	140	MAR9.0
Type 5A		1	160	SD271.0
Type 5B		1	180	COL1.0
Type 5B		1	140	ORB35.0
Type 5B		1	300	SD188.3
Type 5B		1	220	SD250.3
Type 5B		1	160	SD271.0
Type 5C		2	-	FP4.0
Type 5C		1	180	MAR99.0
Type 5C		1	200	SD174.1
Handle		1	-	CAP33.1
Handle		2	-	CAP34.0
Handle		1	-	CAP63.0
Handle		1	-	CAP64.1
Handle		2	-	CAP100.0
Handle		2	-	CAP157.0
Handle		2	-	CAP159.2
Handle		1	-	CAP159.2
Handle		1	-	CAP159.5
Handle		4	-	CAP164.2
Handle		1	-	CAP164.3
Handle		1	-	CAP164.3
Handle		1	-	CAP164.4
Handle	Finger mark at bottom (cf. Perkins and Walker 1990, Fig. 40.4	1	-	CAP174.0
Handle		1	-	CAP256.0
Handle		1	-	COL2.0
Handle		2	-	COL5.0
Handle		1	-	FP31.1
Handle		1	-	FP34.2
Handle		1	-	LC2.0
Handle		3	-	MAG162.0
Handle		1	-	MAG54.1
Handle		1	-	MAN121.1
Handle		21	-	MAR6.0
Handle	1 spot at bottom (cf. Perkins and Walker 1990, Fig. 40.4	2	-	MAR6.0
Handle		1	-	MAR6.0
Handle		3	-	MAR9.0
Handle		3	-	MAR9.0
Handle		1	-	MAR10.0
Handle		5	-	MAR18.0
Handle		1	-	MAR18.0
Handle		2	-	MAR22.2
Handle		1	-	MAR37.0
Handle		1	-	MAR39.0
Handle		1	-	MAR45.2
Handle		2	-	MAR88.0
Handle		1	-	MAR101.0
Handle		1	-	MAR101.0
Handle		1	-	MAR103.0
Handle		1	-	MAR225.0
Handle		1	-	MAR229.0
Handle		1	-	ORB35.0
Handle		1	-	ORB108.0
Handle		1	-	ORB109.0
Handle		1	-	PR10.0
Handle		2	-	SD141.1
Handle		1	-	SD150.3
Handle		3	-	SD174.1
Handle		1	-	SD186.1
Handle		1	-	SD188.3
Handle		3	-	SD252.0
Handle	Stripe at bottom (cf. Perkins and Walker 1990, Fig. 40.5	1	-	SD256.2
Handle		1	-	SD260.0
Handle		1	-	SD260.0
Handle		6	-	SD271.0
Handle		1	-	TAL110.1
Base type 4		1	200	CAP159.2
Base type 4		1	120	CAP159.4
Base type 4		1	200	CAP164.1
Base type 4		1	160	FP31.1
Base type 4		1	180	FP31.1
Base type 4		1	160	FP114.1
Base type 4		1	140	MAN101.2

Type	Comments	No.	D.	Site
Base type 4		1	180	MAR10.0
-		7	-	CAP34.0
-		4	-	CAP159.4
-		2	-	CAP164.2
-		1	-	CAP164.6
-		11	-	COL2.0
-		4	-	LC112.0
-		1	-	MAR125.0
-		1	-	MAR129.0
-		6	-	MAR213.0
-		1	-	MAR228.0
-		3	-	PF25.0
-		1	-	PR38.0
-		1	-	SD263.1
Total		208 Sherds		

6.2.3.2 Miscellaneous Amphora

Amphorae in Coarseware 1 (EC1)

See coarseware 1, section 6.2.2.2. This is the same fabric as coarseware 1 used for many different types of vessels. The use of this fabric, which was probably produced at a large number of sites, suggests that amphorae were made for local use as well as for transport purposes.

Amphorae

Doganella Type 2: Amphora with a distinct neck and a variety of rim types: B) slightly hooked (cf. Perkins and Walker 1990, Fig. 38.6-10), D.140-200, C) extremely hooked (cf. Perkins and Walker 1990, Fig. 38.11-15), D.140-250).

Doganella Type 3: Amphora with rim out-turned at neck and thickened (cf. Perkins and Walker 1990, Fig. 38.16-17), D.140-240.

Doganella Type 5B: Amphora with a distinct flaring neck and rolled rim, frequently with a lid or stopper seating, with a rolled and thickened rim with an almond shaped section (cf. Perkins and Walker 1990, Fig. 39.5-10), D.132-300.

Handles

Type 1: Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Base

Doganella Type 4: Flat base (cf. Perkins and Walker 1990, Fig. 40.10).

Type	Comments	No.	D.	Site
Doganella 2B		1	140	MAR6.0
Doganella 3		1	-	PR9.0
Doganella 2C		1	180	SD174.1
Doganella 5B		1	240	MAG62.3
Handle 1		1	-	CAP37.1
Handle 1		1	-	CAP46.0
Handle 1	Thumb mark	1	-	CAP65.1
Handle 1		1	-	FP102.2
Handle 1		1	-	MAR233.0
Handle 1		2	-	MAR39.0
Handle 1		1	-	MAR45.2
Handle 1		1	-	MAR6.0
Handle 1		3	-	ORB107.0
Handle 1		3	-	PR9.0
Handle 1		2	-	PR9.0
Handle 1		1	-	PR24.0
Handle 1		2	-	PR59.1
Handle 1		1	-	PR75.0
Handle 1		1	-	SD154.2
Handle 1		2	-	SD174.1
Handle 1		1	-	SD215.2
Handle 1		2	-	SD250.1
Handle 1		1	-	SD257.0
Handle 1		1	-	SD260.0
Handle 1		1	-	TAL115.0
Doganella Base 4		1	-	PR9.0
Total		35 Sherds		

Amphorae in Coarse Creamware 1 (EG1)

See coarse creamware 1, section 6.2.2.4. This fabric is the same as coarse creamware 1 (CC1) and an origin in one of the cities of South Etruria is most likely.

Amphorae

Doganella Type 2C: Amphora with a distinct neck and an extremely hooked rim (cf. Perkins and Walker 1990, Fig. 38.11-15), D.140-250).

Doganella Type 3: Amphora with rim out-turned at neck and thickened (cf. Perkins and Walker 1990, Fig. 38.16-17), D.140-240.

Handles

Type 1: Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Type 2: Handle with a rounded lozenge section.

Type 5: Strap handle attached to shoulder, Fig.6.2.3.2.1.

Base

Doganella Type 4: Flat base Fig.6.2.3.2.2, (cf. Perkins and Walker 1990, Fig. 40.10).

Type	Figure	Comments	No	D.	Site
Doganella 2C	-		1	330	MAG17.0
Doganella 3	-		1	160	SD250.3
Handle 1	-	Ante cocturam graffito 'IV'	1	-	CAP89.1
Handle 1	-		1	-	FP61.1
Handle 1	-		1	-	MAR8.0
Handle 1	-		1	-	MAR18.0
Handle 1	-		1	-	SAM131.0
Handle 1	-		1	-	SAM500.0
Handle 2	-		1	-	PR10.0
Handle 5	6.2.3.2.1		1	-	SAM17.0
Doganella Base 4	6.2.3.2.2		1	200	CAP46.0
-	-		6	-	CAP253.0
-	-		1	-	CAP256.0
-	-		3	-	CAP34.0
-	-		4	-	CAP46.0
-	-		2	-	SD189.1
Total			27 Sherds		

Amphorae in Coarse Creamware 2 (EC34)

See coarse creamware 2, section 6.2.2.5.

Amphora

Doganella Type 2C: Amphora with a distinct neck and an extremely hooked rim (cf. Perkins and Walker 1990, Fig. 38.11-15), D.140-250).

Handle

Type 1: Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Type	Number of Sherds	D. in mm.	Site
Doganella 2C	1	180	PF20.2
Handle 1	1	-	PR24.0
-	1	-	CAP159.2
-	1	-	CAP164.6
-	1	-	CAP256.0
-	1	-	CAP46.0
-	2	-	PF52.0

Total 8 Sherds

Amphora fabric 1 (EA5)

Name: Amphora fabric 1	**Code:** EA5	
Distinguishing features: Powdery pitted surface and distinct inclusions		
Colour: Pinky orange-greyish buff	**Texture:** Rough, powdery	**Strength:** Low
Hardness: Medium	**Resistance:** Low	**Fracture:** Finely irregular
Manufacture Wheel-hand	**Firing temperature:** Medium	**Firing atmosphere:** Mixed
Surface treatment: None		
Clay matrix: Well elutriated		

Inclusions:

Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Crystal	<2	Transparent	Quartz?	5	Angular	Poor	
Particles	<3	Orange	Grog	5	Sub-round	Poor	
Grit	<2	Dark red	Sandstone or shale	3	Sub-round	Poor	
Particles	<3	Yellowish white	Lime	2	Sub-angular	Poor	
Crystal	<1	Black	Augite	1	Angular	Poor	
Platelets	<1	Golden	Biotite mica	1	Platelet	Poor	
Platelets	<1	Silvery	Mica	1	Platelet	Poor	

Notes: Similar to the Doganella amphora fabric, section 6.2.3.1.

Etruscan amphora.

Type 1: Amphora with no distinct neck and slightly up turned rim with handles rising from the top of the rim and arching to join the body at the shoulder. The fabric of the handle is coarser than the body. The rim is similar to Doganella type 4 amphorae. This is not common in Etruscan amphorae but is standard in jugs.

Base

Doganella Type 4: Flat base (cf. Perkins and Walker 1990, Fig. 40.10).

Type	Figure	No	D.	Site
Type 1	6.2.3.2.3	1	110	ORB35.0
Doganella base 4	-	1	-	ORB35.0
-	-	1	-	CAP100.0
-	-	1	-	CAP46.0
-	-	1	-	FP13.3
-	-	1	-	FP116.4
-	-	2	-	LC39.1
Total		8 Sherds		

Amphora fabric 2 (EA6)

Name: Amphora fabric 2	**Code:** EA6	
Distinguishing features: Powdery pitted surface and colour		
Colour: Pinky orange	**Texture:** Rough, powdery	**Strength:** Low
Hardness: Medium	**Resistance:** Low	**Fracture:** rough
Manufacture Wheel-hand	**Firing temperature:** Low	**Firing atmosphere:** Oxidizing
Surface treatment: None		
Clay matrix: Poorly elutriated		

Inclusions:

Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Crystal	<2	Transparent	Sanidine?	10	Angular	Poor	
Particles	<2	Yellowish white	Lime	5	Angular	Poor	
Crystal	<1	Black	Augite	2	Sub-angular	Poor	Abraded
Grit	<0.5	Dark red	?	1	Sub-round	Poor	

Notes: Similar to coarse creamware 3

Etruscan Amphorae

This group of Etruscan amphorae includes the distinctive Handle 6 which is a recognisable sub-group within Gras type EMA and Py type 5 (e.g. Celuzza and Rendini 1991, 27-8, Nos.13-4; Gras 1985, Fig 46b top third from left; Rizzo 1990, 274-8, 311, 378, 379). However, type 1 handles and a Doganella type 3 base were also found in this fabric. This indicates that this particular fabric was not only used for the distinctive group with angled handles and a flat base, but also for amphorae with curved handles and pointed base with a squared-off end. The volcanic inclusions suggest an origin between the Fiora and the Tiber.

Handles

Type 1: Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Type 6: Distinctive handle rising vertically from the shoulder and turning sharply through 90° to run horizontally to join an indistinct neck (cf. Celuzza and Rendini 1991, 27-8, Nos.13-4; Gras 1985, Fig 46b top third from left; Rizzo 1990, 274-8, 311, 378, 379).

Bases

Doganella Type 3: Pointed base with a squared-off end (cf. Perkins and Walker 1990, Fig. 40.9). This base occurs in Gras types EMD and EME and Py type 4 (Py and Py 1974).

Type	Number of Sherds	D. in mm.	Site
Handle 1	2	-	ORB35.0
Handle 6	1	-	TAL110.1
Doganella base 3	1	35	TAL110.1
-	1	-	CAP46.0
-	5	-	CAP46.0
-	10 Sherds	-	ORB35.0

Amphora fabric 3 ?Greco-Italic amphorae (EA8)

Name: Amphora fabric 3			**Code:** EA8				
Distinguishing features: Laminar pinkish orange and yellow patterning in clay							
Colour: Pinkish orange-yellow		**Texture:** Rough			**Strength:** High		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Finely irregular		
Manufacture Wheel-hand		**Firing temperature:** Low			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<3	Dark brown-pink	Grog	10	Sub-round	Poor	
Particles	<2	Dark brown-black	?	10	Sub-round	Poor	
Crystal	<1	Yellowish transparent	Quartz?	2	Angular-sub-angular	Poor	Cuboid
Notes: Clay matrix consists of two poorly mixed varieties of clay.							

Amphorae

This distinctive fabric is laminar with pinkish orange and yellow patterning in the clay matrix and occurs in both Greco-Italic and Dressel 1 amphorae (Pers. Obs.). This fact along with the handle shapes and the distribution at sites which often also had Roman period settlement (CAP46, LC101, PR60, PR61) suggests that these sherds are probably of early Greco-Italic amphorae dating from the later fourth to third centuries.

Handles

Handle 2: Handle with a rounded lozenge section.

Handle 3: Handle with an oval section.

Type	Number of Sherds	Site
Handle 2	1	CAP174.0
Handle 3	1	MAR216.0
-	1	CAP159.0
-	1	CAP164.2
-	2	CAP174.0
-	4	CAP34.0
-	20	CAP46.0
-	1	LC101.2
-	1	MAR231.0
-	1	PF121.2
-	1	PR14.0
-	1	PR60.1
-	1	PR61.1
Total	36 Sherds	

Amphora fabric 4 (EA9)

Name: Amphora fabric 4			**Code:** EA9				
Distinguishing features: Pitted powdery surface							
Colour: Creamy pink		**Texture:** Rough			**Strength:** Medium		
Hardness: Low		**Resistance:** Low			**Fracture:** Rough, laminar		
Manufacture Wheel-hand		**Firing temperature:** Low			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Medium-well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Transparent	Quartz?	5	Angular	Poor	
Particles	<0.5	White	Lime	1	Sub-round	Poor	
Particles	<1	Dark grey	?	5	Round	Poor	
Particles	<1	Orange brown	Grog	2	Sub-angular	Poor	
Voids	<0.5	-	-	1	Laminar	Poor	

This amphora fabric was rare and the type of the amphora was not identified.

Handles

Handle 2: Handle with a rounded lozenge section.

Type	Number of Sherds	Site
Handle 2	1	FP23.0
-	1	CAP150.0
-	1	CAP174.0
-	7	CAP46.0
-	1	LC101.2
-	3	MAR231.0
-	1	PF36.0
-	1	PR9.0
Total	16 Sherds	

Amphora fabric 5 (EA10)

Name: Amphora fabric 5			**Code:** EA10				
Distinguishing features: Colour and inclusions which project from the surface							
Colour: Pinkish buff 5YR 7/6		**Texture:** Rough			**Strength:** Medium		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Rough		
Manufacture Wheel-hand		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Medium-well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<2	White	Quartz?	10	Angular	Poor	
Particles	<1	Orangy red	Grog	10	Sub-round	Poor	
Crystal	<1	Dark grey-black	Augite?	5	Sub-angular	Poor	

This fabric was also found at Doganella and is described as Miscellaneous amphora 3 (Perkins and Walker 1990, 45). The origin is unknown.

Miscellaneous 3

Rolled and thickened rim, (cf. Perkins and Walker 1990, fig.30.7).

Handle

Handle 2: Handle with a rounded lozenge section.

Type	Number of Sherds	Site
Handle 2	1	SAM119.3
Miscellaneous 3	1	FP114.5
Miscellaneous 3	1	LC113.1
Miscellaneous 3	1	PR43.2
Miscellaneous 3	2	PR9.0
Miscellaneous 3	2	SAM41.1
Miscellaneous 3	2	SAM119.3
Total	10 Sherds	

Amphora fabric 6 (EA11)

Name: Amphora fabric 6		**Code:** EA11					
Distinguishing features: Colour and absence of transparent inclusions							
Colour: Pinkish buff		**Texture:** Medium			**Strength:** High		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Finely irregular, laminar		
Manufacture Wheel-hand		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Medium-well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<3	Pink	Grog	5	Sub-round	Poor	Contains pinkish orange sand and lime
Grit	<1	Pinkish grey brown and white	Quartz?	5	Sub-round	Poor	
Platelets	<1	Silvery	Mica	<1	Platelet	Poor	

This fabric was rare and the type of the amphorae was not identified.

Handles

Handle 3: Handle with an oval section.

Type	Number of Sherds	Site
Handle 3	1	FP56.0
Handle 3	3	PR52.0
Handle 3	1	MAN88.7

Type	Number of Sherds	Site
-	1	CAP174.0
-	3	CAP34.0
-	1	FP13.3
-	2	MAN88.2
-	4	MAN88.7
-	2	MAN252.2
Total	18 Sherds	

Amphora fabric 7: ?Greco-Italic amphorae (EA14)

Name: Amphora fabric 7		**Code:** EA14					
Distinguishing features: Shale inclusions							
Colour: Orangy buff		**Texture:** Rough			**Strength:** Low		
Hardness: Low		**Resistance:** Low			**Fracture:** Rough		
Manufacture Wheel-hand		**Firing temperature:** Low			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Whitish translucent	Quartz?	15	Angular	Poor	
Grit	<1.5	Pinkish brown	Shale?	5	Rounded	Poor	
Voids	<0.5	-	-	1	Rounded	Poor	

This fabric was rare and was used possibly for Greco-Italic amphorae.

Number of Sherds	D. in mm.	Site
1	-	CAP34.0

Number of Sherds	D. in mm.	Site
1	160	CAP159.2
1	-	MAN252.2
1	-	PF17.2
4 Sherds	**Total**	

Amphora fabric 8: ? Attic SOS Middle amphora (EA15)

Name: Amphora fabric 8		**Code:** EA15					
Distinguishing features: Fine almost featureless fabric							
Colour: Orangy buff		**Texture:** Smooth			**Strength:** High		
Hardness: Medium		**Resistance:** Low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** High			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<0.25	Translucent	Quartz?	25	Angular?	Good	
Voids	<0.25	-	-	10	?	Good	
Grit	<0.25	Pinkish grey	?	2	Rounded	Good	

Type 1: Flaring thickened rim with a flat top and a slight cordon above the neck. The shape is similar to the Attic SOS Middle amphora (Johnston and Jones 1978). The fabric may also match published

descriptions. SOS amphorae are usually slipped but there were no traces of a slip on these sherds, however, the surface of all the sherds was abraded and so any original slip may have worn off. Date 650-600, if it is an SOS amphora.

Handle

Type 1: Arched handle on the shoulder of the vessel with a circular section.

Type	Figure	Comments	No	D.	Site
Type 1	6.2.3.2.4		1	140	PF25.0
Handle 1	-	Finger mark	1	-	PF16.2
-	-		5	-	CAP253.0
Total			7 Sherds		

Amphora fabric 9: Etruscan Amphorae (EA16)

Name: Amphora fabric 9			**Code:** EA16				
Distinguishing features: Off-white colour and inclusions							
Colour: Greyish cream	**Texture:** Rough				**Strength:** Low		
Hardness: Medium	**Resistance:** Low				**Fracture:** Rough		
Manufacture Wheel-hand	**Firing temperature:** Medium				**Firing atmosphere:** Oxidizing		
Surface treatment: None or self same slip							
Clay matrix: Medium elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Black	Augite	10	Angular	Poor	
Crystal	<1	Transparent	Sanidine?	8	Angular	Poor	
Particles	<1	Orange brown	Grog	3	Sub-round	Poor	
Platelets	<1	Golden	Biotite mica	3	Platelet	Poor	
Notes: Similar to Coarse creamware 1 and amphora fabric 5. For coarseware in this fabric see Coarseware 16.							

Type 1: A vertical beaded rim.

Handles

Type 1: Arched handle on the shoulder of the vessel with a circular section (cf. Perkins and Walker 1990, Fig. 40.4).

Bases

Doganella Type 4: Flat base (cf. Perkins and Walker 1990, Fig. 40.10).

Type	Figure	Comments	No	D.	Site
Type 1	6.2.3.2.5		1	220	PF17.1
Base 4	-		1	-	PR39.0
Base 4	-	S.S.slip	1	120	PR50.0
Base 4	-	S.S.slip	1	100	PR50.0
Handle 1	-		1	-	PF17.1
Handle 1	-		1	-	PR10.0
Handle 1	-		1	-	PR53.0
Handle 1	-		1	-	PR9.0
-	-		1	-	PF14.0
-	-		5	-	PF17.1
-	-		5	-	PF22.0
-	-		2	-	PR50.0
-	-		1	-	PR9
-	-		6	-	PR9.0
Total			28 Sherds		

Amphora fabric 10 (EA17)

Name: Amphora fabric 10			**Code:** EA17				
Distinguishing features: Fine and micaceous							
Colour: Orangy buff	**Texture:** Smooth				**Strength:** Medium		
Hardness: Medium	**Resistance:** Low				**Fracture:** Finely irregular		
Manufacture Wheel-hand	**Firing temperature:** Medium				**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Platelets	<0.25	Silvery	Mica	10	Platelet	Poor	
Particles	<0.5	Orange-grey	Grog	3	Sub-round	Poor	
Particles	<0.5	Dark grey	?	2	Sub-round	Poor	Pitted reflective surface
Particles	<0.5	Yellowish white	Lime	1	Sub-round	Poor	

This fabric was found at Doganella and described as Miscellaneous amphora 7 (Perkins and Walker 1990, 45), it is possibly of Aegean origin.

Handle

Miscellaneous 7: Handle with an oval section.

Type 3: Handle with an oval section.

Type	Number of Sherds	Site
Miscellaneous 7	2	PR27.1
Miscellaneous 7	2	PR38.0
Miscellaneous 7	1	PR76.1
Miscellaneous 7	2	SAM17.0
Handle 3	1	PR9.0
-	1	PR76.1
Total	9 Sherds	

Amphora fabric 11 (EA18)

Name: Amphora fabric 11			**Code:** EA18				
Distinguishing features: Decoration and colour							
Colour: Bright pinkish orange	**Texture:** Medium				**Strength:** High		
Hardness: Medium-high	**Resistance:** High				**Fracture:** Conchoidal, laminar		
Manufacture Wheel	**Firing temperature:** High				**Firing atmosphere:** Oxidizing		
Surface treatment: Bright red horizontal stripes of paint on exterior							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**

Particles	<0.25	Mid-grey brown	Grog	3	Sub-round	Good	
Platelets	<0.25	Silvery	Mica	3	Platelet	Good	
Particles	<0.25	White	Lime	1	?	Good	
Crystal	<0.5	Greyish translucent	Quartz?	<1	Sub-angular	Poor	

The sherd was decorated on the exterior with 8mm stripes bright of red paint. Red geometric painting occurs on a number of Ionian amphora types, e.g. from Chios (Rizzo 1990, Fig. 43, 55) or Clazomenae (Rizzo 1990, 197-8).

Type	Comments	Number of Sherds	Site
-	Thin red stripes	1	PR9.0
Total		1 Sherd	

Amphora fabric 12 (EA20)

Name: Amphora fabric 12		**Code:** EA20					
Distinguishing features: Micaceous							
Colour: Orangey buff		**Texture:** Smooth			**Strength:** Medium		
Hardness: Medium		**Resistance:** Low			**Fracture:** Conchoidal		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Platelets	<0.25	Silvery	Mica	15	Platelet	Good	
Particles	<0.5	Dark brown	?	10	Sub-angular	Poor	
Particles	<1.5	White	Lime	5	Sub-angular	Poor	
Particles	<0.5	Mid-brown	?	2	Sub-round	Poor	

Greek type fabric and handle.

Type	Number of Sherds	Site
Handle 3	1	TAL110.1
Total	1 Sherd	

Handle

Type 3: Handle with an oval section.

Amphora fabric 13 (EA21)

Name: Amphora fabric 13		**Code:** EA21					
Distinguishing features: Fine, buff colour							
Colour: Buff		**Texture:** Smooth			**Strength:** Medium		
Hardness: Low		**Resistance:** Low			**Fracture:** Conchoidal		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<0.25	Yellowish white	Lime	5	Sub-angular	Poor	
Voids	<0.5	-	-	10	-	Poor	
Notes:							

This fabric was identified at Doganella and described as Miscellaneous amphora 8 (Perkins and Walker 1990, 45), possibly of Aegean origin.

Type	Number of Sherds	Site
Handle 3	1	TAL110.1
Handle 3	1	TAL110.1
Total	2 Sherds	

Type 3: Handle with an oval section.

Amphora fabric 14 (EF11)

Name: Amphora fabric 14		**Code:** EF11					
Distinguishing features: Colour and inclusions							
Colour: Pinky orange buff		**Texture:** Smooth, powdery			**Strength:** Low		
Hardness: Medium		**Resistance:** Low			**Fracture:** Finely irregular		
Manufacture Wheel		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Crystal	<1	Transparent	Quartz?	<5	Angular	Good	
Particles	<1	White	Lime?	2	Sub-angular	Poor	
Particles	<1	Black	Lime?	2	Sub-round	Good	
Particles	<1	Orange brown	Grog	1	Sub-round	Poor	
Notes:							

Possibly Samian or Aegean origin. Described at Doganella as Miscellaneous amphora 1 (Perkins and Walker 1990, 45).

Type 1: Rolled and thickened rim (cf. Perkins and Walker 1990, Fig. 40.11).

Type	Number of Sherds	D. in mm.	Site
Type 1	1	100	MAN252.2
Miscellaneous 1	2	-	CAP159.5
Miscellaneous 1	2	-	CAP34.0
Miscellaneous 1	9	-	CAP46.0
Total	14 Sherds		

Amphora fabric 15: Greco-Italic Amphorae (ET9)

This fabric is the same as Coarseware 15, see section 6.2.2.19 for a description. The two diagnostic shapes are of Greco-Italic type.

Rims

Type 1:Rim with a triangular profile, of typical Greco-Italic shape.

Handle

Handle 2: Handle with a rounded lozenge section.

Type	Figure	Comments	No	D.	Site
Type 1	6.2.3.2.6		1	180	SD186.1
Handle 2	-		1	-	SD261.0
-	-		3	-	CAP46.0
-	-		1	-	CAP46.0
-	-		1	-	CAP46.0
-	-		3	-	CAP100.0
-	-		1	-	LC112.0
-	-		1	-	MAN101.2
-	-	Brown slip	1	-	PR9.0
-	-		1	-	SD263.0
-	-		1	-	SD277.2
Total			15 Sherds		

Total Miscellaneous Amphora 249 Sherds

6.2.4. Pithoi

The majority of the *pithoi* were catalogued by Derek Kennet in 1987. The types and fabrics identified by Kennet have here been assimilated into the classification used at Doganella (Perkins and Walker 1990, 37, 39). It has been impossible to relate the individual pieces originally drawn by Kennet to particular sites. Therefore the redrawn illustrations from these originals are only illustrative of the types identified by Kennet and cannot precisely identified in the listed finds. The diameters recorded by Kennet were only approximate, and are listed as a dimension range.

6.2.4.1 Pithoi Coarseware 1

For a description of the fabric see section 6.2.2.2.

Pithoi

Type 1: Plain everted rim, (cf. Attolini and Perkins 1992, Fig. 15.22-23; Perkins and Walker 1990, Fig. 32.2, 33.1-3). D. 300-520.

Type 3: Plain everted and thickened rim. (cf. Attolini and Perkins 1992, Fig. 16.1-3; Perkins and Walker 1990, Fig. 33.5-7).

Type 4: Everted, thickened and rolled rim, cf. Fig. 6.2.4.1, (cf. Attolini and Perkins 1992, Fig. 16.4-5; Perkins and Walker 1990, Fig. 33.8, 34.1-5)

Type 5: Everted and hooked rim, (cf. Perkins and Walker 1990, Fig. 34.6, 35.13).

Type 13: Hooked rim with flat top, (cf. Perkins and Walker 1990, Fig. 35.4). Fig 6.2.4.2.

Type 17: Slightly overhanging rim with a flat top, cf. Fig. 6.2.4.3, (cf. Perkins and Walker 1990, Fig. 29.5). Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 18: Squared off horizontal rim with a flat top and an incurving wall, cf. Fig. 6.2.4.4.

Type 19: Sharply everted and slightly thickened rim.

Type 20: Triangular sectioned rim with flat top, cf. 6.2.4.5. Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Bases

Type 1: Simple flat base, (cf. Perkins and Walker 1990, Fig. 35.8).

Type	Comments	No	D.	Site
Pithos 1		2	400	MAR16.0
Pithos 1		1	280	PR9.0
Pithos 1		1	360	SD250.1
Pithos 1		1	300	SD256.0
Pithos 3		1	290	FP114.5
Pithos 3	1vessel, with 2 rope cordons	12	340	MAR99.0
Pithos 3		1	400	MAR127.0
Pithos 3		1	340	SD260.0
Pithos 4	Rope cordon	2	350	MAG54.1
Pithos 4		1	500-600	PR7.2
Pithos 4		1	300-400	TAL113.3
Pithos 5		1	-	MAR98.0
Pithos 5		1	400	SD250.1
Pithos 13		1	400-500	CAP88.2
Pithos 13		1	500-600	CAP88.2
Pithos 13		1	-	MAG78.2
Pithos 13		1	400-500	PF14.0
Pithos 13		1	500-600	PF14.0
Pithos 13	Roman site	2	500-600	PR36.0
Pithos 13		1	400-500	PR56.0
Pithos 17		1	400-500	CAP34.0
Pithos 17		1	300-400	CAP164.2
Pithos 17		1	400-500	MAG50.2
Pithos 17		1	400-500	MAG78.2
Pithos 17	Roman site	1	400-500	MAN104.0
Pithos 17		1	400-500	MAN262.0
Pithos 17	Roman site	1	300-400	MAN274.0
Pithos 17	Roman site	1	300-400	MAR4.0
Pithos 17	Roman site	1	400-500	MAR4.0
Pithos 17	Roman site	1	300-400	MAR15.0
Pithos 17		1	400-500	MAR16.0
Pithos 17		1	300-400	MAR66.0
Pithos 17		1	300-400	MAR99.0
Pithos 17	Roman site	1	500-600	ORB13.0
Pithos 17		1	300-400	ORB35.0
Pithos 17		1	400-500	PF16.2
Pithos 17		1	300-400	PR14.0
Pithos 18	Roman site	1	300-400	PF118.0
Pithos 19	Opposed finger nail impressions on neck.	1	400	MAR39.2
Pithos 20		1	400-500	CAP159.2
Pithos 20		1	400-500	MAG62.3
Pithos 20	Roman site	1	500-600	MAG82.0
Pithos 20		1	400-500	MAN54.4
Pithos 20	Roman site	4	500-600	ORB60.0
Pithos 20	Roman site	1	400-500	SAM25.1
Pithos	Handle	1	500-600	CAP164.2
Pithos base 1		1	400-500	MAN72.2
Pithos base 1		1	-	MAN96.2
Pithos base 1		1	300-400	MAR79.0
Pithos base 1		1	400-500	MAR210.2
Pithos base 1		1	400-500	SAM22.1
Pithos base 1	Roman site	1	400-500	SAM25.1
Pithos base 1	Roman site	1	400-500	SD173.0
-	Roman site	1	-	CAP19.0
-		1	-	CAP34.0

Type	Comments	No	D.	Site
-		1	-	CAP54.0
-		1	-	CAP91.0
-		1	-	CAP91.0
-		1	-	CAP159.2
-		1	-	CAP159.5
-		1	-	CAP164.4
-		1	-	COL2.0
-	Medieval site	1	-	FP4.0
-	Roman site	2	-	FP49.0
-	Roman site	1	-	LC107.1
-	Roman site	1	-	LC114.2
-	Roman site	1	-	MAG10.0
-	Roman site	1	500-600	MAN53.1
-	Roman site	1	500-600	MAN56.0
-		1	400-500	MAN72.2
-		2	500-600	MAN72.2
-		1	-	MAN77.1
-	Roman site	1	400-500	MAN84.0
-		2	500-600	MAN84.1
-		1	-	MAN113.2
-		2	400-500	MAN118.2
-		1	400-500	MAN150.3
-	Roman site, smoothed with exterior red paint	1	-	MAN157.0
-		1	-	MAR39.0
-		1	-	MAR41.0
-		1	-	MAR87.2
-	Roman site	1	500-600	MAR121.0
-		1	-	MAR202.0
-		1	-	MAR209.0
-		1	-	MAR222.0
-		1	-	MAR223.0
-		2	-	MAR224.0
-	Roman site	1	-	ORB60.0
-		1	-	ORB100.0
-		1	-	ORB107.0
-		1	-	PF14.0
-		1	-	PF16.2
-		3	-	PF17.2
-	Roman site	1	-	PR1.0
-	Pierced	1	-	PR9.0
-		1	-	PR10.0
-		1	-	PR18.1
-		1	-	PR21.0
-		1	-	PR38.0
-		2	-	PR48.0
-	Red slip on exterior	1	-	PR50.0
-		1	-	PR56.0
-		1	-	SAM21.3
-	Roman site	1	500-600	SAM25.1
-	Exterior dark red paint	1	-	SAM102.2
-		1	-	SAM106.2
-		1	-	SAM124.2
-		1	-	SAM500.0
-		1	400	SD216.1
-		1	-	SD250.1
-		1	-	SD255.0
-		1	-	SD255.0
-		1	-	SD260.0
-		3	-	SD261.0
Total		141 Sherds		

6.2.4.2 Pithoi Coarseware 2

This is the same fabric as Coarseware 2, the Doganella amphora fabric, and was made at the city at Doganella. Only one sherd of *pithos* was found. For a description of the fabric see section 6.2.2.3.

Type	Number of Sherds	D. in mm.	Site
-	1	-	SD175.0
Total	1 Sherd		

6.2.4.3 Pithoi Coarse Creamware 1

For a description of the fabric see section 6.2.2.4. In the pithoi the fabric tends to have a darker color than in the pottery.

Pithoi

Type 4: Everted, thickened and rolled rim, cf. Fig. 6.2.4.1, (cf. Attolini and Perkins 1992, Fig. 16.4-5; Perkins and Walker 1990, Fig. 33.8, 34.1-5)

Type 13: Hooked rim with flat top ,(cf. Perkins and Walker 1990, Fig. 35.4). Fig 6.2.4.2.

Type 17: Slightly overhanging rim with a flat top, cf. Fig. 6.2.4.3, (cf. Perkins and Walker 1990, Fig. 29.5). Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 21: Wide horizontal overhanging rim, cf. Fig. 6.2.4.6.

Type	Comments	No	D. in mm.	Site
Pithos 4		1	400-500	CAP34.0
Pithos 4		1	400-500	FP4.0
Pithos 4		1	400-500	FP115.2
Pithos 4	Roman site	1	400-500	MAN106.0
Pithos 4		1	300-400	MAR39.0
Pithos 13		1	400-500	FP61.1
Pithos 13		1	500-600	PF14.0
Pithos 13		1	500-600	PR56.0
Pithos 17		1	400-500	FP23.0
Pithos 17		1	400-500	FP116.1
Pithos 17		1	500-600	MAR86.0
Pithos 17	Roman site	1	400-500	MAR208.1
Pithos 17		1	300-400	PR24.0
Pithos 17		1	400-500	PR56.0
Pithos 17	Red slip on exterior	1	400-500	PR56.0
Pithos 17		1	400-500	PR82.2
Pithos 21		1	500-600	SD59
-		1	-	CAP43.1
-	Roman site	1	-	CAP57.1
-		1	-	CAP89.1
-		1	-	CAP91.0
-		1	-	CAP159.4
-		1	-	COL5.0
-	Roman site	1	-	FP44.0
-	Roman site	1	-	FP49.0
-		1	-	FP102.2
-	Roman site	1	-	FP108.0
-		1	-	FP113.0
-	Red slip on exterior	1	-	FP114.1
-		4	-	FP114.1
-		1	400-500	FP114.3
-		1	-	FP114.5
-		1	-	FP115.2
-		1	-	FP115.2
-		1	-	FP116.1
-		1	-	FP116.2
-		1	-	LC112.0
-		1	-	LC113.0
-	Roman site	1	-	LC114.2
-		1	-	MAG4.1
-	Roman site	1	-	MAG8.0
-	Roman site	1	-	MAG84.0
-	Roman site	1	-	MAG88.0
-		1	-	MAR80.1
-	Roman site	1	-	MAR97.0
-		1	-	MAR230.2
-		1	-	MAR231.0
-	Roman site	1	-	ORB61.0
-		1	-	ORB103.0
-	Roman site	2	-	PF114.0
-	Roman site	1	-	PF118.0
-	Roman site	1	-	PF121.2
-		1	-	PR19.2

Type	Comments	No	D. in mm.	Site
-		1	-	PR38.0
-		1	-	PR41.0
-		1	-	PR43.2
-		1	-	PR52.2
-	Roman site	1	-	PR58.0
-		1	-	PR66.0
-		1	-	PR68.0
-		2	-	SAM21.3
-	Roman site	1	-	SAM33.0
-	Roman site	1	-	SAM35.0
-	Roman site	1	-	SAM38.0
-		1	-	SAM47.0
-		1	-	SAM47.0
-	Roman site	1	-	SAM123.0
-		1	-	SAM500.0
-	Medieval	1	-	SAM53.0
-		1	-	SD225.0
-		1	-	SD250.1
-		1	-	SD256.0
Total		77 Sherds		

6.2.4.4 Pithos fabric 1

Name: Pithos fabric 1		**Code:** ED1					
Distinguishing features: Very visible white inclusions							
Colour: Light red-grey-black 2.5YR 6/6, 7.5YR 5/4-3/2		**Texture:** Rough			**Strength:** Low		
Hardness: Medium		**Resistance:** Medium			**Fracture:** Hackly		
Manufacture Wheel-hand		**Firing temperature:** Medium			**Firing atmosphere:** Mixed		
Surface treatment: None							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<5	White	Lime	30	Angular	Poor	
Grit	<3	Black-brown	?	3	Sub-round	Poor	
Platelets	<4	Silvery	Mica	5	Platelet	Poor	
Platelets	<2	Golden	Biotite mica	5	Platelet	Poor	

Pithoi

Type 4: Everted, thickened and rolled rim, cf. Fig. 6.2.4.1, (cf. Attolini and Perkins 1992, Fig. 16.4-5; Perkins and Walker 1990, Fig. 33.8, 34.1-5)

Type	Comments	Number of Sherds	D. in mm.	Site
Pithos 4	Roman site	1	400-500	PR44.0
-		1	-	MAR222.0
-		1	-	ORB107.0
Total		3 Sherds		

6.2.4.5 Pithos fabric 2

Name: Pithos fabric 2		**Code:** ET5					
Distinguishing features: Inclusions							
Colour: Orange brown 2.5YR 6/6-4/8		**Texture:** Rough			**Strength:** High		
Hardness: High		**Resistance:** High			**Fracture:** Hackly		
Manufacture Wheel-hand		**Firing temperature:** Medium			**Firing atmosphere:** Oxidizing		
Surface treatment: Wiped							
Clay matrix: Poorly elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<2	White	Lime	10	Sub-round	Poor	
Grit	<6	Dark red	?	10	Sub-round	Poor	
Crystal	<2	Transparent	Quartz?	5	Angular	Poor	
Particles	<2	Dark red	Grog	2	Sub-round	Poor	
Notes: A coarse fabric but with a well finished surface. Similar to coarseware 1.							

This coarse fabric is similar to Coarseware 1 and was also used to make tiles.

Pithoi

Type 1: Plain everted rim, (cf. Attolini and Perkins 1992, Fig. 15.22-23; Perkins and Walker 1990, Fig. 32.2, 33.1-3). D. 300-520.

Type 4: Everted, thickened and rolled rim, cf. Fig. 6.2.4.1, (cf. Attolini and Perkins 1992, Fig. 16.4-5; Perkins and Walker 1990, Fig. 33.8, 34.1-5)

Type 13: Hooked rim with flat top ,(cf. Perkins and Walker 1990, Fig. 35.4). Fig 6.2.4.2.

Type 17: Slightly overhanging rim with a flat top, cf. Fig. 6.2.4.3, (cf. Perkins and Walker 1990, Fig. 29.5). Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 18: Squared off horizontal rim with a flat top and an incurving wall, cf. Fig. 6.2.4.4.

Type 20: Triangular sectioned rim with flat top, cf. 6.2.4.5. Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 21: Wide horizontal overhanging rim, cf. Fig. 6.2.4.6.

Type	Comments	No	D.	Site
Pithos 1		1	400-500	SD150.3
Pithos 4		2	300-400	CAP100.0
Pithos 4		1	300-400	CAP159.2
Pithos 4		1	400-500	CAP164.3
Pithos 4		1	400-500	CAP34.0
Pithos 4	Roman site	1	400-500	CAP58.0
Pithos 4		1	400-500	CAP63.0
Pithos 4		1	400-500	CAP89.1
Pithos 4		2	400-500	CAP91.0
Pithos 4		1	400-500	FP114.1
Pithos 4		1	400-500	FP114.3
Pithos 4		1	400-500	FP114.5
Pithos 4	Roman site	1	300-400	MAG50.2
Pithos 4		1	400-500	MAG56.3
Pithos 4		1	400-500	MAR22.2

Type	Comments	No	D.	Site
Pithos 4		1	400-500	MAR221.0
Pithos 4		1	300-400	MAR222.0
Pithos 4	Roman site	1	400-500	MAR4.0
Pithos 4	Roman site	1	300-400	MAR40.1
Pithos 4		1	300-400	MAR41.0
Pithos 4		1	300-400	MAR45.2
Pithos 4		1	300-400	MAR66.0
Pithos 4		1	400-500	MAR98.0
Pithos 4	Roman site	1	400-500	ORB206.0
Pithos 4		1	500-600	PF14.0
Pithos 4		1	400-500	PF16.2
Pithos 4		1	400-500	PF3.2
Pithos 4		1	300-400	PR24.0
Pithos 4		1	400-500	PR24.0
Pithos 4		2	400-500	PR24.0
Pithos 4		1	400-500	PR26.2
Pithos 4		1	300-400	PR65.0
Pithos 4		2	400-500	PF106.0
Pithos 4	Roman site	1	400-500	TAL150.0
Pithos 13		1	300-400	MAN5.1
Pithos 13	Roman site	1	300-400	MAR97.0
Pithos 17		1	400-500	CAP164.2
Pithos 17	Roman site	1	400-500	FP20.0
Pithos 17		1	500-600	FP115.2
Pithos 17	Roman site	1	400-500	MAN76.0
Pithos 17		1	500-600	MAN252.2
Pithos 17	Roman site	1	500-600	MAN261.0
Pithos 17	Roman site	1	400-500	MAR4.0
Pithos 17	Roman site	1	500-600	MAR30.0
Pithos 17	Roman site	1	500-600	SAM104.0
Pithos 17		1	300-400	SAM23.2
Pithos 17	Roman site	1	400-500	SAM45.1
Pithos 17		1	400-500	SAM51.3
Pithos 18		1	400-500	MAN88.7
Pithos 18	Roman site	1	300-400	PR1.0
Pithos 18		1	400-500	PR56.0
Pithos 20		1	500-600	CAP64.2
Pithos 20		1	400-500	CAP159.2
Pithos 20	Roman site	1	500-600	FP9.0
Pithos 20	Roman site	1	300-400	MAG51.1
Pithos 20	Roman site	1	300-400	MAN76.0
Pithos 20		1	400-500	MAN252.2
Pithos 20		1	500-600	MAR22.2
Pithos 20		1	300-400	MAR35.2
Pithos 20	Roman site	1	400-500	MAR97.0
Pithos 20	Roman site	1	300-400	MAR208.1
Pithos 20	Roman site	1	400-500	MAR214.0
Pithos 20	Roman site	1	500-600	ORB13.0
Pithos 20	Roman site	1	500-600	ORB30.0
Pithos 20	Roman site	1	500-600	ORB36.0
Pithos 20	Roman site	1	500-600	ORB38.0
Pithos 20	Roman site	2	500-600	ORB38.0
Pithos 20	Roman site	1	500-600	ORB61.0
Pithos 20	Roman site	1	500-600	ORB65.0
Pithos 20	Roman site	2	500-600	ORB66.0
Pithos 20		1	500-600	PF3.2
Pithos 20	Roman site	1	500-600	PF118.0
Pithos 20	Roman site	1	500-600	PR1.0
Pithos 20		1	300-400	SAM106.2
Pithos 20		1	300-400	SAM106.2
Pithos 20	Roman site	1	500-600	SD175.0
Pithos 20	Roman site	1	500-600	SD175.0
Pithos 20		1	300-400	SD188.3
Pithos 20		1	500-600	TAL113.3
Pithos 21		1	500-600	CAP64.2
Pithos Base 1		1	500-600	MAR21.2
Pithos Base 1	Roman site	1	400-500	MAR50.0
-		1	-	CAP31.2
-		1	-	CAP33.1
-		1	-	CAP34.0
-		1	-	CAP46.0
-		2	-	CAP64.2
-		1	-	CAP88.2
-		1	-	CAP89.1
-		1	-	CAP159.2
-		1	-	CAP164.2
-		1	-	CAP164.4
-		1	-	COL2.0
-	Roman site	1	-	FP3.0
-		1	-	FP8.2
-		1	-	FP8.2
-	Roman site	1	-	FP20.0
-		1	-	FP23.0
-		1	-	FP23.0
-	Roman site	1	-	FP105.0
-		2	-	FP114.1
-		1	-	FP116.1
-	Roman site	1	-	LC9.0
-	Roman site	1	-	LC49.0
-	Roman site	1	-	LC49.0
-	Roman site	1	-	LC107.1
-		1	400-500	LC112.0
-	Roman site	1	-	MAG1.0
-		1	-	MAG73.2
-		1	-	MAG78.2
-	Roman site	1	-	MAG150.0
-	Roman site	1	-	MAN1.0
-	Roman site	1	-	MAN51.0
-		1	-	MAN54.4
-		1	-	MAN54.4
-	Roman site	1	-	MAN76.0
-		1	-	MAN88.7
-		1	-	MAN88.7
-	Roman site	1	-	MAN274.0
-	Roman site	1	-	MAR4.0
-	Roman site	1	-	MAR4.0
-		1	-	MAR18.0
-		1	-	MAR21.2
-	Roman site	1	-	MAR36.0
-		1	-	MAR37.0
-		1	-	MAR37.0
-	Roman site	1	-	MAR40.1
-	Roman site	1	-	MAR65.0
-	Roman site	1	-	MAR76.0
-		1	-	MAR80.1
-		1	-	MAR80.1
-		1	-	MAR91.0
-	Roman site	1	-	MAR97.0
-		2	-	MAR98.0
-	Roman site	1	-	MAR130.0
-	Roman site	1	-	MAR133.0
-	Roman site	1	500-600	MAR205.0
-	Roman site	2	-	MAR208.1
-	Roman site	1	-	MAR220.0
-		1	-	MAR222.0
-		1	-	MAR226.0
-	Roman site	1	-	ORB19.0
-	Roman site	1	-	ORB36.0
-	Roman site	1	-	ORB38.0
-	Roman site	1	-	ORB60.0
-	Roman site	1	-	ORB66.0
-	Roman site	1	-	ORB114.0
-		3	-	PF14.0
-		1	-	PF16.2
-	Roman site	1	-	PF118.0
-	Roman site	1	-	PF124.0
-	Rope cordon	1	300-400	PR9.0
-		1	-	PR9.0
-	Slip	1	400-500	PR11.2
-		1	-	PR43.2
-		1	500-600	PR56.0
-		1	-	PR66.0
-		1	-	PR75.0
-		1	-	PR79.0
-		1	-	PR82.2

Type	Comments	No	D.	Site
-		1	-	SAM21.3
-		1	-	SAM22.1
-		1	-	SAM131.0
-	Roman site	1	-	SD44.0
-		1	-	SD141.1
-		1	-	SD150.3
-	Roman site	2	-	SD175.0
-	Roman site	1	-	SD178.0
-	Roman site	1	-	SD181.1
-	Roman site	1	-	SD181.1
-		1	-	SD277.2
-		1	-	TAL115.0
-		1	-	TAL217.1
-	Roman site	1	-	TAL219.0
Total		187 Sherds		

6.2.4.6 Pithos fabric 3

Name: Pithos fabric 3		**Code:** ET7					
Distinguishing features: Light colour, pitted surface							
Colour: Creamy white 10YR 7/2-8/3-7/4	**Texture:** Rough, powdery		**Strength:** High				
Hardness: Medium	**Resistance:** Medium-high		**Fracture:** Rough				
Manufacture Wheel-hand	**Firing temperature:** Medium		**Firing atmosphere:** Mixed				
Surface treatment: None							
Clay matrix: Well elutriated							
Inclusions:							
Type	**Size mm.**	**Colour**	**Mineral**	**%**	**Shape**	**Sorting**	**Note**
Particles	<4	Dark red	Grog	3	Rounded	Poor	
Voids	<4	-	-	3	Rounded	Poor	
Grit	<1	Brown	?	2	Sub-round	Poor	
Crystal	<2	Transparent	Quartz?	1	Angular	Poor	

This fabric has been described at Doganella as Coarseware 5, and tile fabric 2 (Perkins and Walker 1990, 41, 48-9). See section 6.2.5.5.

Pithoi

Type 1: Plain everted rim, (cf. Attolini and Perkins 1992, Fig. 15.22-23; Perkins and Walker 1990, Fig. 32.2, 33.1-3). D. 300-520.

Type 4: Everted, thickened and rolled rim, cf. Fig. 6.2.4.1, (cf. Attolini and Perkins 1992, Fig. 16.4-5; Perkins and Walker 1990, Fig. 33.8, 34.1-5)

Type 13: Hooked rim with flat top ,(cf. Perkins and Walker 1990, Fig. 35.4). Fig 6.2.4.2.

Type 17: Slightly overhanging rim with a flat top, cf. Fig. 6.2.4.3, (cf. Perkins and Walker 1990, Fig. 29.5). Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 18: Squared off horizontal rim with a flat top and an incurving wall, cf. Fig. 6.2.4.4.

Type 20: Triangular sectioned rim with flat top, cf. 6.2.4.5. Frequent occurrence on Roman sites suggests it is a late Etruscan and Roman shape.

Type 21:Wide horizontal overhanging rim, cf. Fig. 6.2.4.6.

Type	Comments	No	D. in mm.	Site
Pithos 1	Roman site	1	500-600	ORB60.0
Pithos 4	Roman site	2	400-500	MAR17.0
Pithos 4	Roman site	1	400-500	MAR205.0
Pithos 4		1	500-600	PR7.2
Pithos 13		1	500-600	CAP64.2
Pithos 13		1	300-400	MAN54.4
Pithos 13	Roman site	1	300-400	SAM104.0
Pithos 13	Roman site	1	400-500	SAM104.0
Pithos 17	Roman site	1	400-500	FP44.0
Pithos 17	Roman site	1	400-500	MAG3.0
Pithos 17	Roman site	1	400-500	MAN3.1
Pithos 17	Roman site	1	400-500	MAN261.0
Pithos 17		1	300-400	MAR106.0
Pithos 17	Roman site	1	500-600	MAR205.0
Pithos 17		1	500-600	PR56.0
Pithos 17	Roman site	1	500-600	SAM103.0
Pithos 18		1	500-600	MAN252.2
Pithos 18	Incised decoration	2	500-600	SD184.2
Pithos 20	Roman site	1	500-600	CAP57.1
Pithos 20		1	300-400	FP8.2
Pithos 20	Roman site	1	400-500	MAN261.0
Pithos 20	Roman site	1	500-600	MAR17.0
Pithos 20		1	500-600	MAR210.2
Pithos 20	Roman site	1	500-600	ORB17.0
Pithos 20	Roman site	1	300-400	SAM45.1
Pithos 20	Post cocturam graffito 'XXIII'	1	500-600	SD132.0
Pithos 20	Roman site	1	500-600	SD163.0
Pithos 21		1	500-600	CAP64.2
Pithos 21		1	500-600	MAN252.2
Pithos Base 1	Roman site	1	400-500	MAG151.0
Pithos Base 1		1	300-400	MAR35.2
Pithos Base 1		1	400-500	SD184.2
Pithos Base 1		1	300-400	SD254.0
-		1	-	CAP159.2
-		2	-	FP8.2
-	Roman site	1	-	FP22.0
-		1	-	FP23.0
-		1	-	FP31.1
-		1	-	FP34.2
-	Roman site	1	-	FP42.0
-		2	-	FP54.0
-	Roman site	1	-	FP59.0
-		1	-	FP61.1
-		1	-	FP115.2
-	Roman site	1	-	LC107.1
-	Roman site	2	-	MAN1.0
-	Roman site	1	-	MAN6.0
-		1	-	MAN88.7
-	Roman site	1	500-600	MAN274.0
-	Roman site	1	-	MAR17.0
-		1	-	MAR20.1
-		1	500-600	MAR21.2
-		2	-	MAR21.2
-		1	-	MAR22.2
-		1	-	MAR35.2
-	Roman site	1	-	MAR40.1
-	Roman site	1	-	MAR46.0
-	Roman site	1	-	MAR50.0
-	Roman site	1	-	MAR71.0

Type	Comments	No	D. in mm.	Site
-		1	-	MAR87.2
-	Roman site	1	-	MAR207.0
-	Roman site	1	-	MAR208.1
-	Roman site	1	-	MAR214.0
-	Roman site	1	-	ORB69.0
-		1	-	PR35.0
-	Roman site	1	-	SAM38.0
-	Roman site	1	-	SAM104.0
-	Roman site	1	-	SD173.0
-		1	-	SD184.2
-		1	-	SD188.3
Total		76 Sherds		

6.2.5 Tiles

The finds of tiles were not systematically catalogued. Most of those listed are from the immediate hinterland of Doganella.

6.2.5.1 Coarseware 1

See section 6.2.2.2 for a description of the fabric, which was generally coarser in tile.

Tiles

Type 1: Pan tile with raised edges, (cf. Perkins and Walker 1990, Fig. 42.1-2).

Type 2: Canal tile, (cf. Perkins and Walker 1990, Fig. 41.15).

Type 4: Pan tile with sloping raised edges, (cf. Perkins and Walker 1990, Fig. 41.16-18). Date: archaic.

Type	Comments	Number of Sherds	Site
Tile 1		1	SAM500.0
Tile 1		1	SD216.1
Tile 1		1	SD250.2
Tile 1		3	SD250.3
Tile 1		1	SD256.5
Tile 2		1	SC171.0
Tile 2		1	SD250.3
Tile 4		1	SD251.3
-	Waster	1	MAN97.0
-		1	SD141.1
-		1	SD215.2
-		1	SD250.2
-		1	SD250.3
-		3	SD256.3
-		3	SD262.0
-		2	SD263.0
Total		23 Sherds	

6.2.5.2 Coarseware 2

See section 6.2.2.3 for a description of the fabric.

Brick: Tile with a flat right-angled corner.

Type 1: Pan tile with raised edges, (cf. Perkins and Walker 1990, Fig. 42.1-2).

Type 4: Pan tile with sloping raised edges, (cf. Perkins and Walker 1990, Fig. 41.16-18). Date: archaic.

Type	Number of Sherds	Site
Brick	1	SD263.0
Brick	1	SD250.3
Tile 1	1	SD150.3
Tile 1	1	SD263.0
Tile 4	1	SD263.0
-	1	SD256.4
Total	6 Sherds	

6.2.5.3 Coarse Creamware 1

See section 6.2.2.4 for a description of the fabric.

Type 1: Pan tile with raised edges, (cf. Perkins and Walker 1990, Fig. 42.1-2).

Type	Number of Sherds	Site
Tile 1	1	SD250.2
Tile 1	2	SD261.0
	1	SD256.5
Total	4 Sherds	

6.2.5.4 Tile fabric 1

See section 6.2.2.6 for a description of the fabric.

Type 2: Canal tile, (cf. Perkins and Walker 1990, Fig. 41.15).

Type	Number of Sherds	Site
Tile 2	1	SD250.2
-	2	SD186.1
-	1	SD250.3
-	1	SD260.0
-	4	SD261.0
-	1	SD262.0
Total	10 Sherds	

6.2.5.5 Tile fabric 2

See section 6.2.4.6 for a description of the fabric which was also used for pithoi and pottery.

Brick: Tile with a flat right-angled corner.

Type 1: Pan tile with raised edges, (cf. Perkins and Walker 1990, Fig. 42.1-2).

Type	Number of Sherds	Site
Brick	1	SD256.0
Tile 1	1	SD150.3
Tile 1	2	SD250.3
Tile	1	SD260.0
Tile	1	SD261.0
Total	6 Sherds	

6.2.6 Terracottas

Name:		Code: EC24					
Distinguishing features: Colour and inclusions							
Colour: Pinkish orange		Texture: Rough			Strength: Medium		
Hardness: Medium		Resistance: Medium			Fracture: Finely irregular		
Manufacture Mould-hand		Firing temperature: Medium			Firing atmosphere: Oxidizing		
Surface treatment: None							
Clay matrix: Well elutriated. Mixed laminar pink and cream colour							
Inclusions:							
Type	Size mm.	Colour	Mineral	%	Shape	Sorting	Note
Particles	<0.25	White	Lime	10	Angular	Poor	
Grit	<0.25	Black	Augite?	10	Angular	Poor	
Particles	<0.25	Dark red-orange	Grog	5	Sub-round	Poor	
Crystal	<0.5	Pinkish transparent	?	1	Angular	Poor	
Crystal	<0.5	Light green transparent	Augite?	1	Angular	Poor	

Figurine

Figurine: A sherd which may be part of a relief or a figurine appearing to represent drapery on one side. Hand or mould made.

Type	Number of Sherds	Site
Figurine?	1	MAR212.0
Total	1 Sherd	

6.2.7 Bobbins, weights and whorls

Type	Figure	Number of Sherds	Site
Bobbin	-	1	MAR21.2
Weight?	-	1	MAN93.0
Whorl	6.2.7.1	1	MAN157.0
Whorl	6.2.7.2	1	SD250.3
Whorl	6.2.7.3	1	SD256.2
Total		5 Sherds	

6.3 A tomb group from Poggio Volpaio

Bucchero

Chalices

(Note - All sherds without handles have been catalogued as chalices rather than *Kantharoi*)

1. (Fig. 6.3.1.*1*) 2 sherds of fine dark grey well reduced fabric with silver and gold platelets of mica. The walls are not very thin but the surfaces are well polished. The interior of the carination is marked by a shallow groove and the exterior is decorated with adjoining arched impressions. The upper wall is divided by three parallel horizontal grooves (cf. Rasmussen 1979, type 2d). D. 130mm.

2. Form and fabric as 1 above, D. 140mm.

3. (Fig. 6.3.1.2) 1 body sherd as 1 above but decorated on the exterior with a double ridge at the carination the upper of which is decorated with a line of oblique elliptical impressions. Between this an a single horizontal groove is a graffiti zigzag line. A chalice with identical decoration was found at Poggio Bacchino (Minto 1935, 55, Tav. VI, 2)

4. (Fig. 6.3.1.*3*) 2 sherds but with a thinner wall decorated on the exterior with a single horizontal groove. D. 110mm.

5. (Fig. 6.3.1.*5*) A plain rim sherd. Fabric as 1 above, D. 110mm.

6. 1 body sherd with three horizontal parallel grooves on exterior of wall, fabric as 1 above.

Kantharoi

7. Body sherd with fabric as 1 above.

8. 1 body sherd with upper attachment of handle fabric as 1 above.

9. 1 body sherd with lower attachment of handle fabric as 1 above.

Cup

10. (Fig. 6.3.1.*3*) The exterior is decorated with a narrow cordon at the inflexion of the wall and with a graffiti zigzag between two parallel horizontal lines at the lip. The decoration is unusual for cups and the shape suggests a date in the first quarter of the sixth century (Rasmussen 1979, 120), cf. Rasmussen cup 3b. The vessel could also possibly be a sherd of kyathos Rasmussen (4b) similar to examples published from Vulci (Rizzo 1990, 98 Nos.36-7) dated to the mid sixth century. Fabric and finish as 1 above. D. 130mm.

Oinochoe

11. 1 sherd of neck and shoulder with a beading at the inflexion. Fabric and finish as 1 above.

12. Handle sherd with 3 facets to the exterior and curved on the interior, fabric and finish as 1 above, (cf. Rasmussen 1979, Plate 16, 62), D. 16mm.

Feet

13. Fig. 6.3.1.*6*) Foot ring possible of a cup, fabric and finish as 1 above. D. 55mm.

14. Foot ring , fabric and finish as 1 above.

Body sherds

19 body sherds fabric and finish as 1 above.

Buccheroid Impasto

Chalices

15. (Fig. 6.3.1.*9*) Body sherd with carination decorated with rhomboid impressions linked above with an arched impression. 3 Parallel horizontal grooves on the exterior of the wall with a poorly executed open fan above. The fabric is similar to the bucchero above with silver mica, sand and lime inclusions but less well elutriated. The interior and exterior are well polished but the fabric is not strongly reduced and the resulting colour is a strong dark brown rather than black.

16. 2 Body sherds with 4 parallel horizontal grooves on the exterior of the wall. Fabric and finish as 15 above.

17. (Fig. 6.3.1.*10*) Body sherd with 2 parallel horizontal grooves on the exterior of the wall. Fabric and finish as 15 above but oxidised on the interior. D.110mm.

18. 2 sherds similar to 17 above. Fabric and finish as 15 above but oxidised. D.130mm.

19. 2 Body sherds from below the carination with slightly spiralling deep grooves on the exterior to produce a fluted bowl. Fabric and finish as 15 above.

20. (Fig. 6.3.1.*11*) 4 sherds, exterior decorated with 3 parallel horizontal grooves on the exterior of the wall. D.130mm.

?Kantharos

21. (Fig. 6.3.1.*7*) 2 sherds of a shallow bowl with a rounded carination and low concave out-turned wall. A curved handle sherd with a crescent section almost certainly from the same vessel suggests that it may have been a *kantharos*. Fabric and finish as 15 above. D.105mm.

Bowls

22. (Fig. 6.3.1.*13*) Tronco-conical bowl with an incurving rim, decorated on the exterior at the rim with two parallel horizontal dotted lines composed of impressions and similar oblique lines above. Fabric and finish as 15 above. D.120mm.

23. (Fig. 6.3.1.*14*) Carinated cup with two parallel horizontal grooves on the upper part of the wall. Fabric and finish as 15 above. D.130mm.

Oinochoe

24. (Fig. 6.3.1.*8*) 5 body sherds and a sherd of flaring neck and shoulder with the inflexion marked by a beading on the exterior. The rim has a small pointed lobe. Fabric and finish as 15 above. D.92mm.

25. (Fig. 6.3.1.*12*) 5 Co-joinable and 3 other body sherds of a small globular vessel with a faceted vertical handle. On the exterior the shoulder is a horizontal groove, immediately below this is a festoon executed by an incision with a blunt tool, both edges of the resulting groove are decorated with impressions *'a falsa cordicella'*. This combination of decoration is unusual but is paralleled by a jar from the upper valley (Donati and Michelucci 1981, 39 No.53) and another from Roselle (Bocci 1978, 33 No.16). Below this is a zigzag consisting of separate straight incised lines. At the bottom points of the zigzag is an impression in the shape of a lotus bud. The vessel appears to have been made on a slow wheel. Fabric and finish as 15 above.

Body sherds
14 body sherds fabric and finish as 15 above.

Impasto
Chalices
26. (Fig. 6.3.1.*16*) 6 Co-joinable sherds with a *post cocturam* zigzag graffito above the carination. The fabric is unevenly fired to a dark red to black colour and the vessel is wheel made and well polished on the interior and exterior. The fabric has been classified as EF1 and is fully described in the appendix. D.143mm.
27. (Fig. 6.3.1.*18*) 2 Sherds, exterior of the wall is decorated with 4 parallel horizontal grooves. Fabric and finish as 26 above, D.130.
28. (Fig. 6.3.1.*19*) 8 Sherds of a large chalice, exterior of the wall is decorated with 4 parallel horizontal grooves. Fabric and finish as 26 above, D.160.
29. (Fig. 6.3.1.*20*) 3 Sherds, exterior of the wall is decorated with 4 parallel horizontal grooves. Fabric and finish as 26 above, D.150.
30. 4 sherds almost identical to 29 above but with a less pronounced carination. D.145mm.
31. (Fig. 6.3.1.*21*) 2 rim Sherds, slightly concave exterior of the wall is decorated with 3 parallel horizontal grooves. 1 sherd of a high foot probably from the same vessel. Fabric and finish as 26 above, D.150.
32. (Fig. 6.3.1.*22*) 2 Sherds of a poorly executed chalice with a plain carination, exterior of the wall is decorated with 2 parallel horizontal grooves. Fabric and finish as 26 above, D.130.
33. Poorly preserved rim sherd of a plain chalice. Fabric and finish as 26 above, D.150mm.

Bowls
34. (Fig. 6.3.1.*16*) 4 Sherds of a deep bowl with an out-turned lip with 2 grooves on the upper surface. The upper part of the wall is decorated with 3 Parallel horizontal grooves. Fabric and finish as 26 above, D.200mm.
35. (Fig. 6.3.1.*24*) 2 sherds of a deep bowl with a faint carination and an up-turned rim. Decorated with two grooves on the exterior of the upper part of the wall. Fabric and finish as 26 above, D.140.
36. (Fig. 6.3.1.*23*) Sherd of a carinated bowl with a plain rim and a horizontal line incised on the exterior of the upper part of the wall. Fabric and finish as 26 above but with volcanic inclusions, D.130.
37. 4 Sherds identical to 36 above but with a slightly higher carination. D.130mm.
38. (Fig. 6.3.1.*25*) Sherd of a carinated bowl with 2 parallel horizontal grooves above the carination. The fabric as 26 above but highly polished and reduced to a light grey similar to an impressed bowl from ORB40.0 (Fig 6.2.2.1.*5*), a bowl excavated at Marsiliana (Minto 1921, 64, 268, Tav. L No.3) and a bowl on display in the Communal Museum at Manciano. D.120mm.
39. 7 Sherds (cf. Fig. 6.3.1.*25*) but with the grooves further apart. Fabric and finish as 26 above, D.140.
40. (Fig. 6.3.1.*26*) 2 Sherds of a carinated bowl with a plain rim and low foot ring. An *ante cocturam* graffito 'V' is on the underside of the base. Fabric and finish as 26 above, D.130.
41. 4 Sherds (cf. Fig. 6.3.1.*26*), fabric and finish as 26 above, D.120mm.
42. 2 Body sherds (cf. Fig. 6.3.1.*26*) but with a horizontal groove above the carination and a group of three horizontal parallel grooves towards the middle of the upper part of the wall. Fabric as 26 above but with a highly polished finish.
43. (Fig. 6.3.1.*27*) Sherd of a small carinated bowl decorated with a dotted zigzag on the exterior of the upper part of the wall. Fabric as 26 but with an unpolished finish, D.100mm.
44. (Fig. 6.3.1.*29*) Sherd of a low foot ring with part of a stamp consisting of at least two concentric circles on the lower part of the wall. Fabric and finish as 26 above, D.76mm.
45. Base sherd (cf. Fig. 6.3.1.*29*). Fabric and finish as 26 above.

Kylix
46. Handle sherd forming part of a kylix preserved to a length of 100mm with a diameter of 13mm. Fabric and finish as 26 above.

Coarseware
Jars
47. (Fig. 6.3.1.*30*) Small jar with a cylindrical neck and an out-turned rim. The fabric is coarse, well fired and oxidised with wiped surfaces, it is classified as EC1 and fully described in the appendix. D.80mm.
48. (Fig. 6.3.2.*31*) 15 sherds of a large ribbed globular jar. The splayed rim has grooves on the interior. Below a shallow groove at the shoulder are applied vertical ribs. The base is a simple disc. Fabric and finish as 47 above, D.180mm.
49. (Fig. 6.3.2.*32*) 8 Sherds of a large reticulate stamnoid jar (*olla a rete*). The splayed rim has a groove on the interior. A handle sherd was of the typical stamnoid shape. The body was decorated with a reticulate pattern of clay ridges forming a series of rectangles. This pattern was traced on the body before the clay was applied. Fabric and finish as 47 above, D.240mm.
50. 1 Handle sherd of a vertical handle rising from a rim.

Corinthian
51. Very small body sherd slipped black on the interior, decorated in black-dark red on the exterior with parts of a goat's head facing left with 2 rosettes above, outlined with incisions. Wall is 2mm thick.

?Etrusco Corinthian

52. (Fig. 6.3.1.*15*) Body sherd, probably a cup. Pale cream fabric with a metallic black-brown slip on the interior and two bands in the exterior separated by two grooves.

Metals

Silver

53. Small fragment of sheet silver, verdigris suggests a high copper content.

Copper Alloy

54. Piece of shapeless cast copper alloy.

55. Small fragment of sheet copper alloy with repoussé decoration of a line with three circular dots in a horizontal line above.

6.4 General characterisation of the assemblage and conclusions

The pottery can be divided into five main groups: fine wares, coarsewares, coarse creamwares, *amphorae* and *pithoi*. The earliest fine wares, the buccheroid impasto, are probably locally made although parallels can be found with neighbouring parts of Etruria. Vessels are typically bowls and drinking vessels. The boundary between fine and coarseware can be hard to draw in the 7th and 6th centuries and some of the *impasto* vessels, especially the plates and bowls, are finely finished. Storage jars are also found in impasto; some of the bowls may also have served as lids. The impasto is similar to that found in neighbouring areas and there are also similarities with finds from Cerveteri. These wares are more or less contemporary with the bucchero which is of variable quality. Most of the few sherds were from drinking vessels. The black *bucchero* bowls were followed in the 5th century by a less fine grey bucchero fabric.

From perhaps the end of the 6th century the black fine wares were replaced by a fine cream coloured ware which was generally undecorated. This can be stylistically linked to Etrusco-Corinthian wares and bucchero through similarities in shapes and technique (Perkins and Walker 1990, 27-31). The radical change in the colour of the pottery is remarkable, particularly in the light of the fact that fine wares revert to a black finish with the Hellenistic Black Gloss Wares of the 4th through to the 1st centuries BC. The repertoire of shapes is broader in the creamware with bowls, cups, chalices, jars, jugs and plates. Some creamwares have similarities in shape with Black Gloss Wares and a few preserve traces of red or brown paint, suggesting that there may be links between creamware and Black Gloss productions. If these links are substantiated in the future then it would be possible to trace lines of connection between the pottery traditions of 6th century BC Etruria and the *terra sigillata* industries of 1st century AD Etruria.

The majority of the coarsewares are a distinctive sandy dark red, brown to black fabric (Coarseware 1). The most common forms are undecorated storage and cooking jars, bowls, lids and basins. Both the shape and the fabrics are variable and this suggests that there was a multiplicity of production centres. However, very few wasters or kiln debris were found in the countryside. This would seem to suggest that either the pottery was largely produced in the centres, as for example at Doganella and then reached the countryside through mechanisms of exchange (as did other ceramics) or that the traces of rural kilns were too ephemeral, like bonfires, to survive and be detected by field survey.

The coarsewares are generally poorly dated and the survey finds add little to the account provided by the finds from Doganella. The most fundamental chronological indicator is the shape of the body, globular jars are generally, but not exclusively, earlier than ovoid jars. With much overlapping, globular shapes date to the 7th and 6th centuries, and ovoid shapes to the 5th to 4th. Parallel to this the interior inflexion between the shoulder and neck of the jar changes from being curvilinear to become angular. These changes can be illustrated by a comparison of, for example, the predominantly 6th century jars from Lago dell´Accesa (Camporeale *et al* 1985, 136-65) or Piana di Stigliano (Zifferero 1980, 42-56) with the largely 5th century jars from Casale Pian Roseto (Murray Threipland and Torelli 1970, 80-82, figs.27-8).

The earliest globular jars (Type 1) have a simple everted rim, often grooved on the interior and date, from the evidence of tombs, between the late 8th and the mid 6th (Bosio and Pugnetti1986, 91-2, 97 n.86-8). A version with a less sharply everted rim (Type 2) perhaps extends to the end of century. Through the 6th century, examples appear with a thickened rim (Type 3) (e.g. Pyrgi 1970, fig.170 nos.6-13). In some pieces this thickening is exaggerated by rolling to produce a bead around the rim or a slight hooked overhang (e.g. Zifferero 1980, Tav.11 no.8, 12 no.5, 14 no.5). Towards the end of the sixth century this thickening is combined with rolling to produce what has been christened in southern Etruria the ´early almond rim´ (Murray Threipland and Torelli 1970, 82-4; Potter 1979, 15-18), which becomes characteristic of the 5th and 4th centuries (Type 4). Parallel with these rims a hooked rim also develops and is common through the same period (Type 5) (e.g. Murray Threipland and Torelli 1970, fig.27 nos.1-11, fig.29 nos.4-6).

Along with the general change in form and the shape of the rim, the points of inflexion of the rim tend to become more angular with time, particularly at the junction of neck and shoulder and the top edge of the rim, which in the 6th century tends to be curved, but later becomes sharp. These two features combine to produce a flat rather than curved interior profile in the neck. As yet it is not possible to relate these different rim types to differing function; cooking jars and storage jars seem to share the same range of rim types.

Such a sequence cannot be created for the bowls, which are mostly either hemispherical or tronco-conical in shape with plain rims. However, the foot rings have been presented and dated using the same criteria as have been applied to the morphology of the jar rims. In most cases it has not been possible to distinguish between bowls and lids, indeed it would seem that same shaped vessels served both functions. (Perkins and Walker 1990, 34-5).

The survey evidence does not contradict this tentative description of morphological changes and shows that it may be applied to the region of the Albegna valley and Ager Cosanus a whole and not just the city at Doganella. Future excavation of stratified and dated deposits will clarify this model (e.g. Donati 1994) and publication of other survey collections e.g. from Tuscania (Barker *et al.* 1993), Cerveteri (Enei 1992) or Southern Etruria (Potter 1979) will allow the model to be compared with developments in other parts of Etruria.

The coarse creamwares form a subgroup of the coarsewares. These had a distinctive cream clay colour and frequent mineral inclusions. The most common forms were large basins, jars and bowls. The basins were possibly for mixing dough as shown on the walls of the *Tomba Golini I* at Orvieto (Blanck 1987, 109). Minerals in Coarse Creamware 1 indicate that it was imported from a volcanic part of Etruria.

The amphorae can be divided into three significant groups; those made in the Albegna Valley itself at Doganella, those originating from other parts of Etruria, and those imported from elsewhere. Doganella remains the only known centre of *amphorae* production, no doubt there are others to find (almost certainly at Cerveteri (Amphora fabric2), Tarquinia and Vulci).

Amphora made in other parts of Etruria were imported into the Albegna Valley, but their precise origins remain unknown. A few amphora were also made in Coarseware 1, presumably for local use. A variety of other amphorae come from different sources, from Athens (Amphora fabric 8), the Levant (Perkins and Walker 1990, 45) and Corinth (Perkins and Walker 1990, 45), and possibly from the Aegean (Amphora fabric 10, 13, 14), Ionia (Amphora fabric 11) and Mende (Perkins and Walker 1990, 45). Although most of the imported amphorae were found in the urban centres and in the coastal areas, some did find their way inland. These imports are few but they do demonstrate that trading links with the eastern Mediterranean did exist and were not confined to the urban centres.

The *pithoi* are large storage vessels which occur with a limited variety of rim shapes. These, like the *amphora*, fit into the phenomenon of agricultural development in Etruria during the 7th century. One of the surprising conclusions, fully discussed below, to be drawn from the study is that some of the *pithoi* have distinctive distribution patterns which suggest that they were either objects of trade or were made by itinerant craftsmen, who travelled with some of their raw materials.

The Albegna Valley/Ager Cosanus survey has recovered an assemblage of Etruscan pottery from a well-defined area of Southern Tuscany. This publication forms the first account of a collection derived from a systematic field survey in Etruria. This fact allows us to assume that the pots here are a representative sample of what can be found in the fields of the Albegna Valley. The collection is not necessarily a representative sample of *all* of the pots which were used in the Albegna Valley during the Etruscan period. This can be seen most readily by comparing the general survey material with the tomb group from Poggio Volpaio which also lacks its fine wares or the excavated contents of tombs (e.g. Minto 1925). The survey material derives largely from settlement sites and even then only contains those pots that were discarded at the site and survived the rigours of post-depositional processes like ploughing and survey techniques. The collection is also very fragmentary; a glance at the figures demonstrates that few complete forms were found. These factors must be taken into consideration when drawing conclusions from the collection. Despite these limitations the collection has an important role to play in Etruscan studies because it acts as a balance to the overall impression of Etruscan pottery which has been largely established from the study of tomb groups. Compare for example the *bucchero* published in a major study by Tom Rasmussen (Rasmussen 1979) with the meagre collection of *bucchero* from the survey. Another important aspect of the collection is that it derives from a regional study with a broad chronological span so a different range of interpretations are possible to those which can be made from the study of the ceramics from a single site.

Bucchero

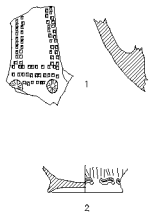


Fig. 6.2.1.1

Buccheroid Impasto

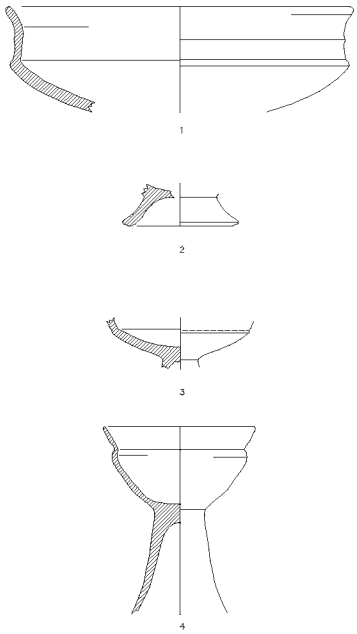


Fig. 6.2.1.2

Grey Bucchero

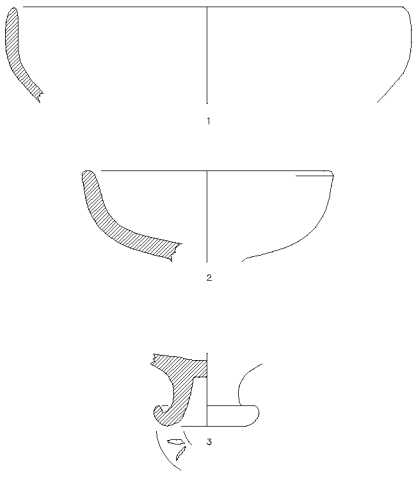


Fig. 6.2.1.3

Fine Creamware

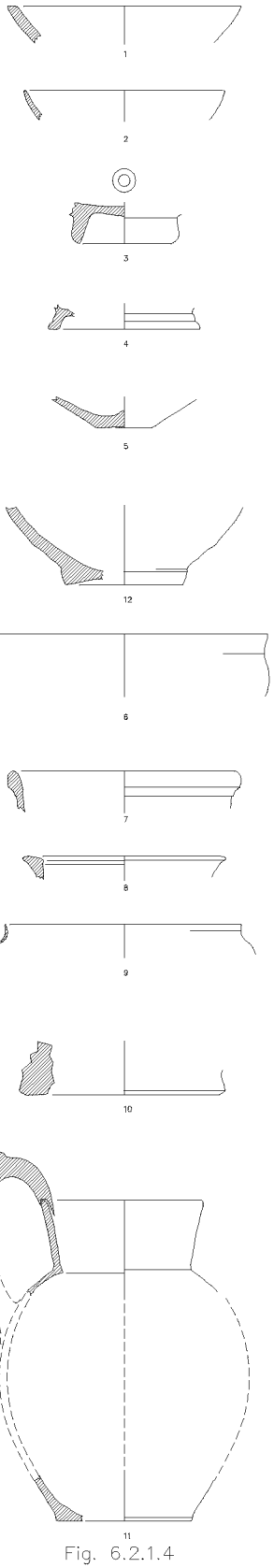


Fig. 6.2.1.4

Impasto

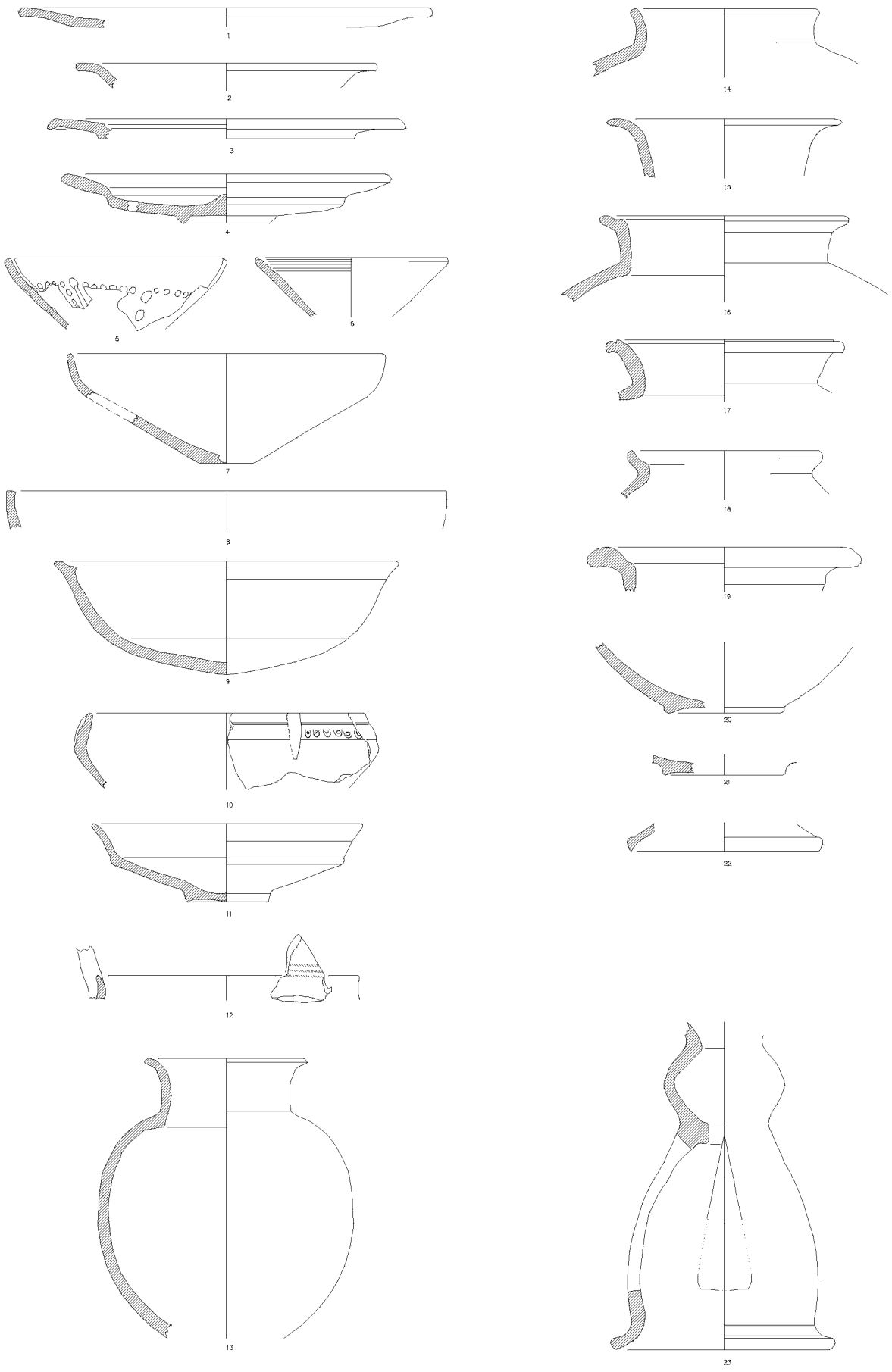


Fig. 6.2.2.1

0 5 10 cm

Coarseware 1

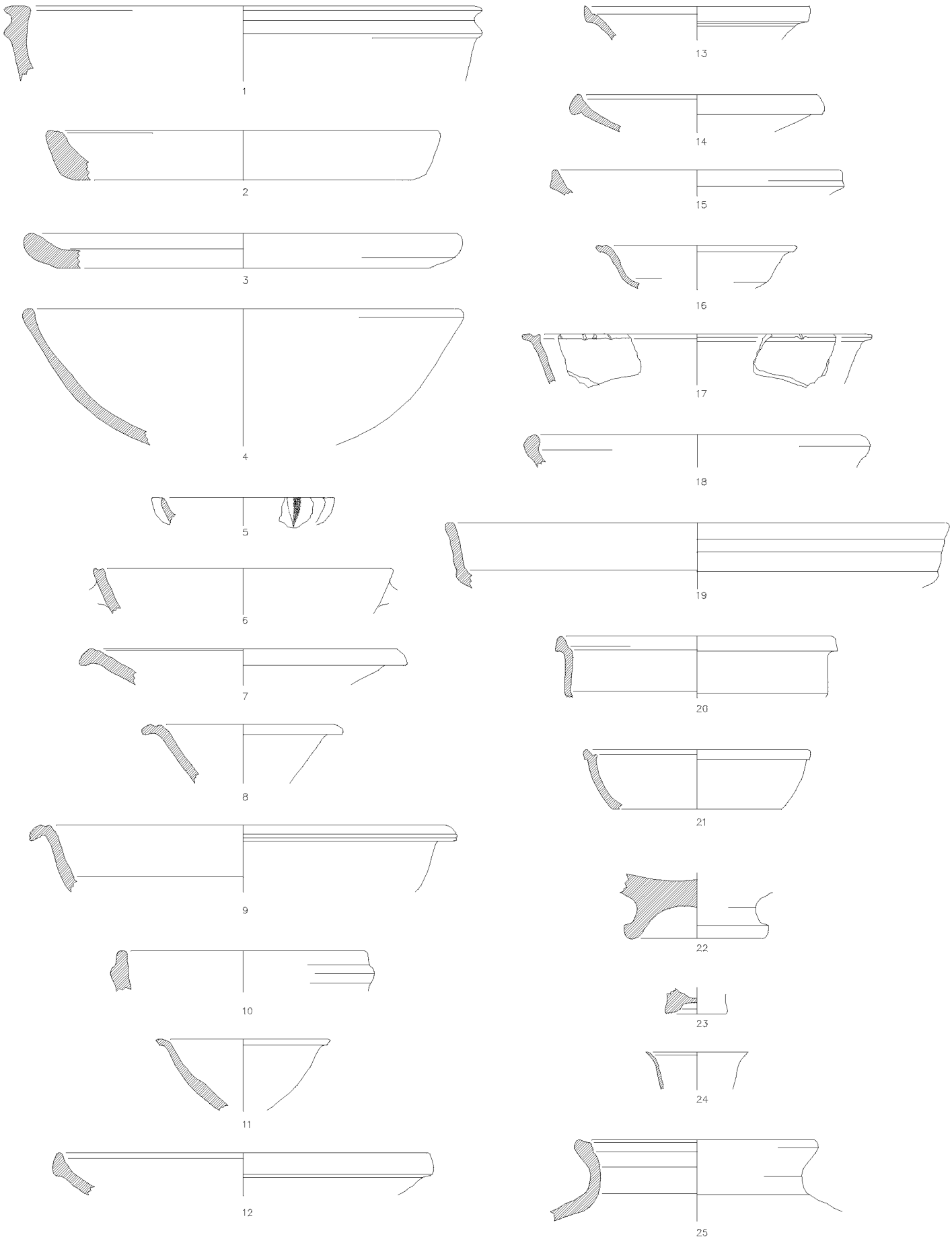


Fig.6.2.2.2

Coarseware 1 (Cont.)

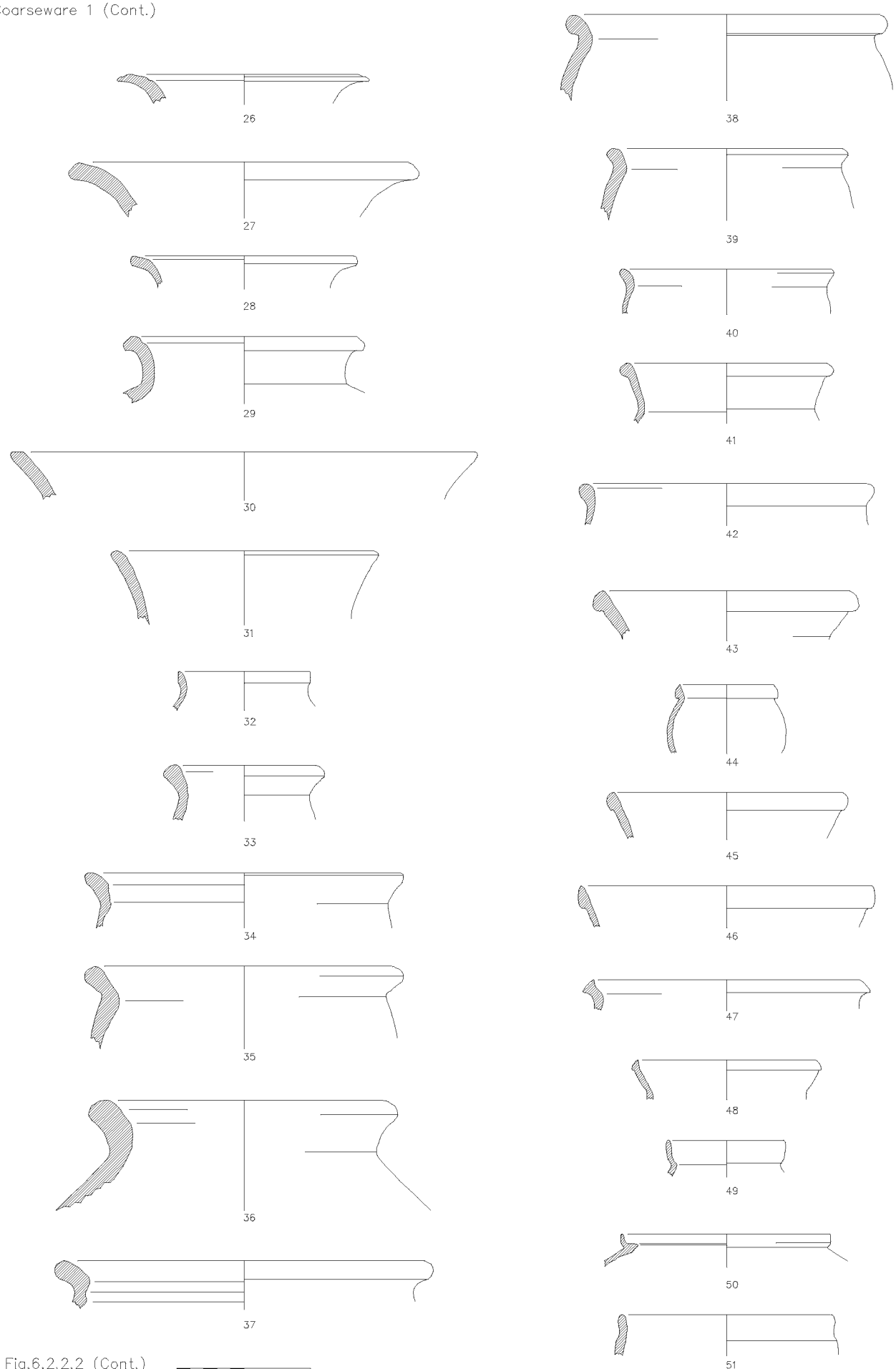


Fig.6.2.2.2 (Cont.)

Coarseware 1 (Cont.)

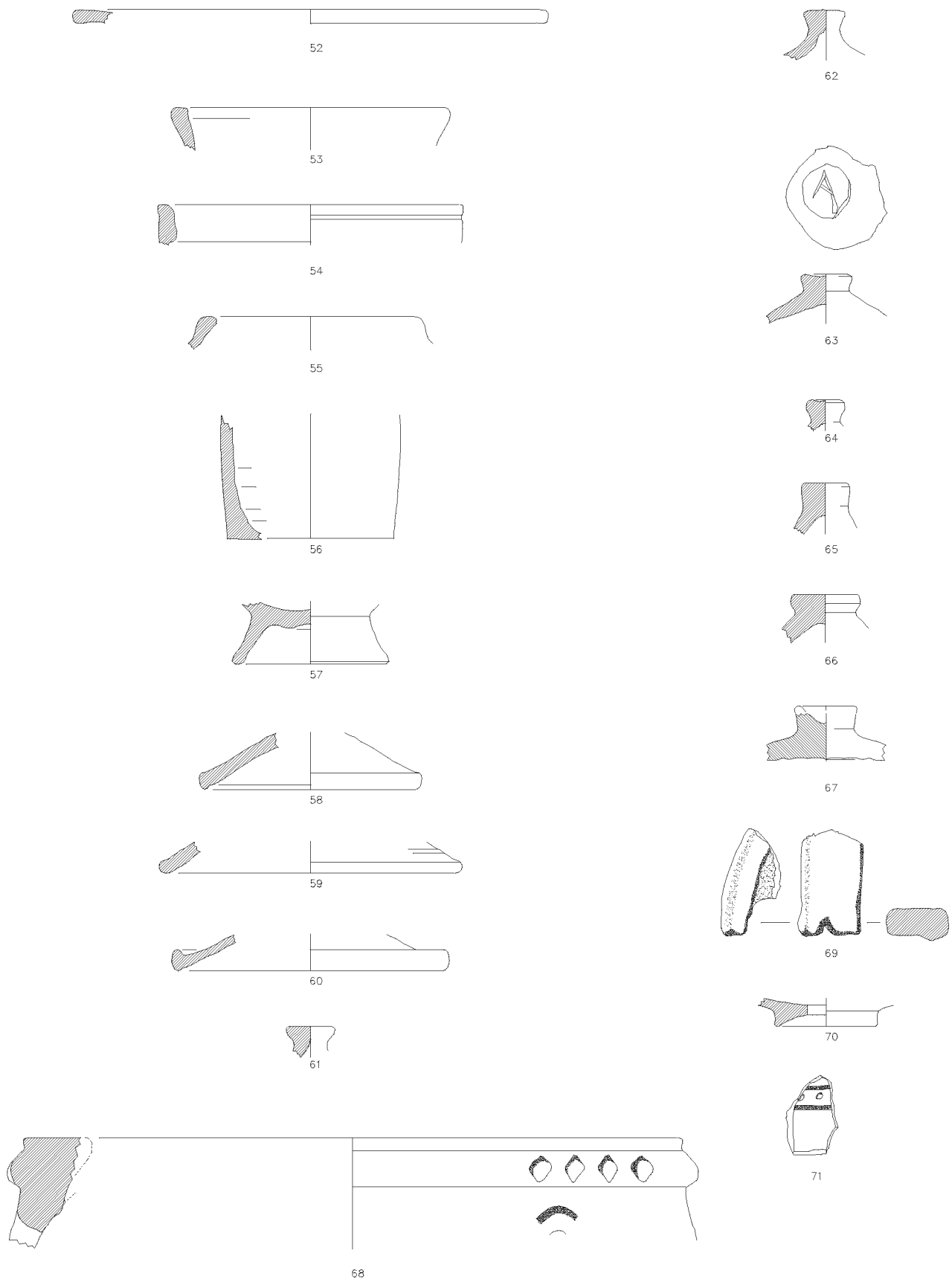


Fig.6.2.2.2

0 5 10 cm

Coarseware 2

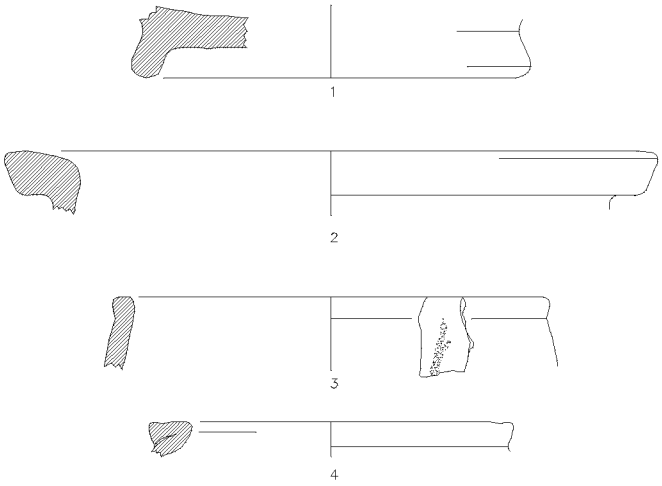
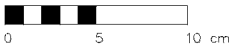


Fig.6.2.2.3



Coarse Creamware

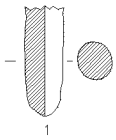


Fig.6.2.2.4

Coarse Creamware 2

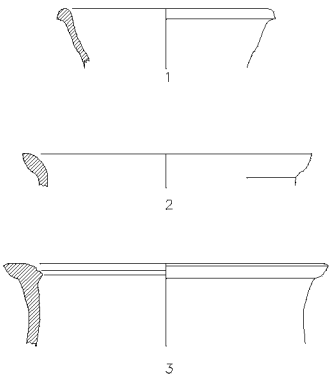
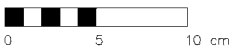
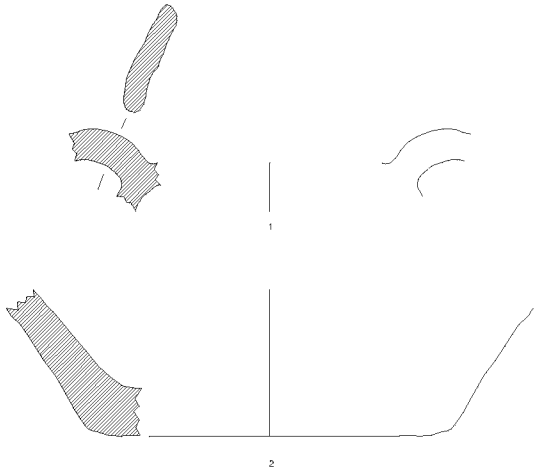
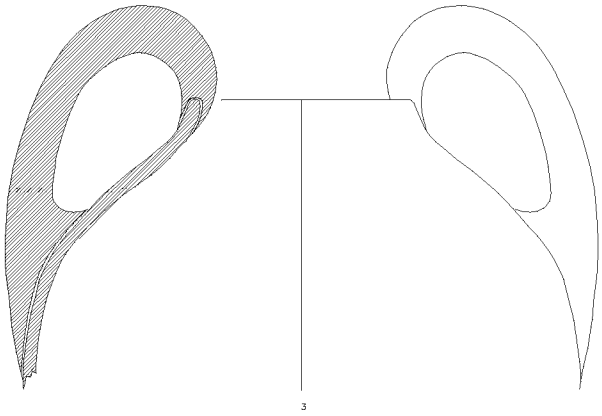


Fig.6.2.2.5



Miscellaneous Amphora





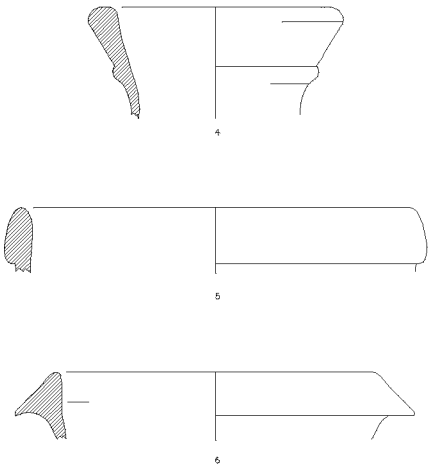


Fig. 6.2.3.2

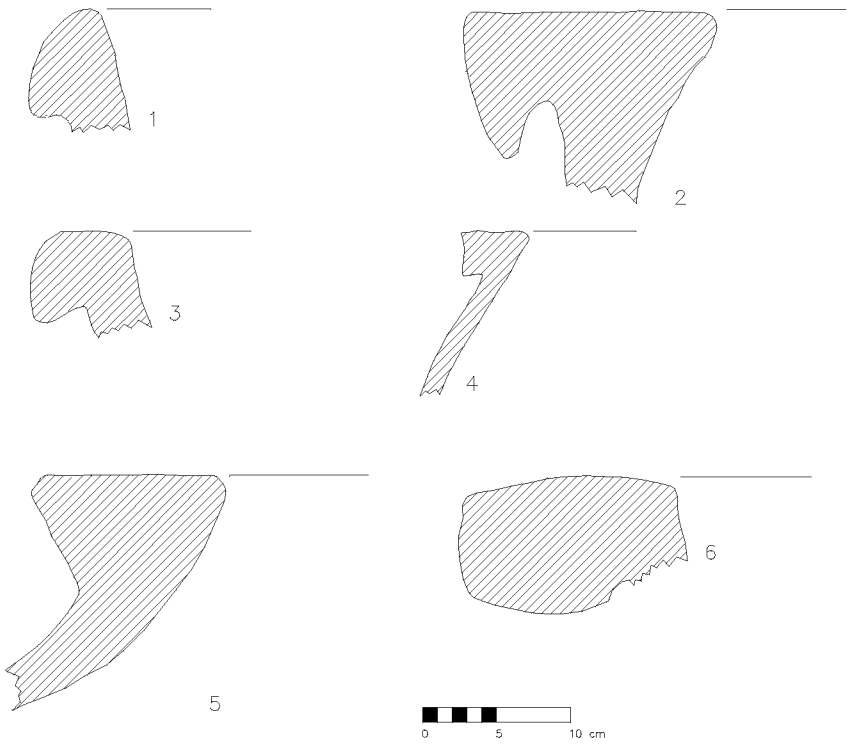


Fig. 6.2.4

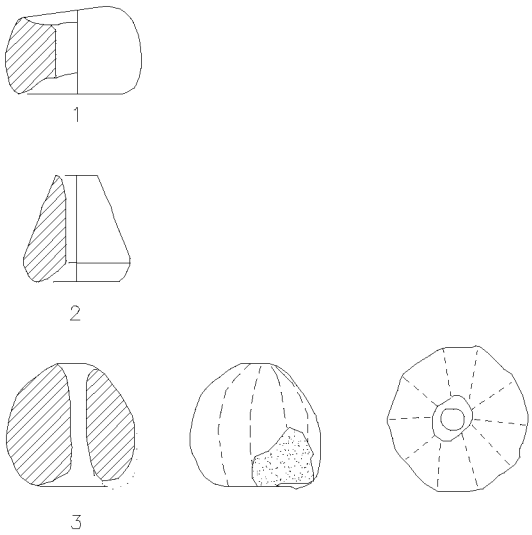


Fig.6.2.7


1
5
8
12
2
7
10
13
3
6
11
15
4
9
14
27
17
20
16
30
18
22
25
19
23
26
21
24
29
0 5 10 cm

Fig.6.3.1

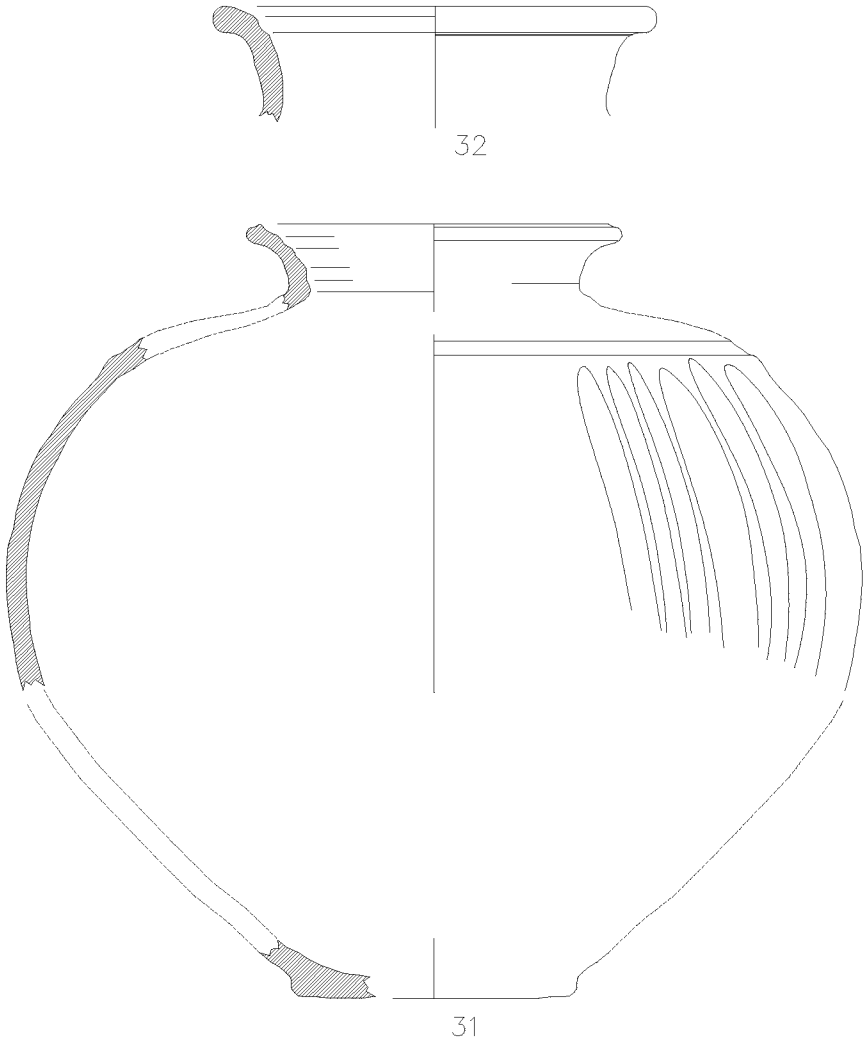


Fig.6.3.2

7. Population and territory

7.1. Population

'It should be obvious that if we have no conception of the numbers of peoples about whom we write and read we cannot envisage them in their concrete reality. What does a statement about the Romans mean, if we do not know roughly how many Romans there were?' (Brunt 1971, 3).

This explicit statement of the need to have some idea of the magnitude of the population size in an area of study introduces the first page of Brunt's ground breaking study of Roman manpower, the same is true of the Etruscans. Other scholars have placed equal emphasis upon the need to enumerate past populations for example in Classical Attica (Sallares 1991, 42-293) or early modern Europe (Braudel 1975, 394-415). Brunt was aware of the field survey evidence which had been gathered in south Etruria by that time (Brunt 1971, 352) but at that point in time no methodologies had been developed to interpret surface scatters in terms of past population densities. A quarter of a century later field survey has transformed our knowledge of settlement patterns in central Italy, yet the interpretation of these patterns in terms of population history is still in its infancy.

Population is clearly a central theme in field survey, in a classic study of south Etruria the fourth chapter is entitled 'The population explosion: south Etruria in the first millennium BC' (Potter 1979). The title is explicit enough, yet within the chapter there is no discussion of the relation ship between survey sites and population. It is assumed, with circumspection, that the great increase in the number of sites in the seventh and sixth centuries is a clear and direct result of a growth in population (Potter 1979, 72-4).

The study of population change has been seen as one of the key aims of archaeological field survey (Cherry 1983, 405) although precise mechanisms as to how this aim might be achieved have not been addressed. As an example, a consideration of the population size in the territory of Gubbio in Umbria, following recent survey work, made no reference to the data collected by the survey (Manconi and Whitehead 1994, 184-6). The discussion relied on a review of alternative approaches - the size of the theatre, the size of the urban area (a technique dating back to at least 1898 when used by Beloch for Pompeii), and extrapolations from pre-modern documents. All these are possible approaches but would seem to reflect the absence of an established approach to the reconstruction of population sizes from survey data.

Estimating the size of past populations is clearly hazardous. There are numerous uncertainties about the nature of the relationships between evidence found on the surface and past settlement densities (Cherry 1983). Usually the results of fieldwork only provide a sample of the archaeological remains to be found in a particular region and so any reconstruction of population must involve some form of interpolation or extrapolation from the observed remains to an estimate of population over an entire region. Furthermore, the recorded frequency and density of surface finds is dependent upon the intensity of modern agricultural activity, survey methodology, and conditions during fieldwork. These factors must be taken into account in an estimate of population size. Finally the dating of the occupation periods of settlement sites found by survey presents problems of precision and establishing contemporaneous use of sites. Despite these problems, the quality of the evidence found in the Albegna valley and Ager Cosanus for the Etruscan period is sufficient, and the questions important enough, to require that the evidence is exploited to the full in order to explore the issue of population history. The process may be hazardous but at least none of the variables which might affect the reliability of the survey evidence discriminate particularly against any part of the Etruscan period and it is not necessary to insist upon the numerical accuracy of our reconstruction if emphasis is placed upon relative change from period to period. Equally an approximation is useful if it can help to distinguish between a population of one hundred, one thousand, ten thousand or a hundred thousand people in the survey area.

The development of population estimates from field survey data is not yet an exact science, but two key approaches may be outlined, one starts from an environmental viewpoint and the other from a study of settlement patterns. An environmental approach would aim to develop an environmental carrying capacity for a region and use this to estimate a population density. Such an approach has been taken by Sallares (1991, 79) in a study of the population of Classical Attica. This reconstruction is based upon an assessment of cereal yields and an estimate of the area of cultivated land in Attica. These are used in conjunction with human nutritional requirements to produce a notional figure for the size of population a region might have supported in the Classical period. The approach is interesting and the reconstruction would be more compelling if estimates of the cultivable area actually cultivated at different periods in time could have been derived from modern field survey. An integrated study using survey results, remote sensing and Geographical Information Systems (GIS) technology could produce a much more reliable estimate of the potential productivity of a region such as Attica. However, when the study concerns periods of the remote past problems of palaeoenvironmental change loom large. It is theoretically possible to produce a GIS model of past environmental productivity, if climatic change and soil degradation and transportation can be reliably estimated and modelled but this would still need to be related to past agricultural systems.

In Classical Attica there is a wealth of written evidence for farming systems and crop yields, but no such data exists for the remainder of the Mediterranean in the central centuries of the first Millennium BC. Figures may not be reliably extrapolated from one area to another because actual agricultural productivity is not simply a product of soil fertility, environment and the biological limits of crops but it is also the result of the strategies employed in farming the land and the demand for food at various times in the past.

Thus a detailed knowledge of past agricultural practices in a region is required before crop and animal yields can be estimated and built into a GIS model of carrying capacity. Construction of such a model might well be possible, but it would be extremely complex and based on a large variety of variables which cannot be directly measured, only estimated.

If such a model of carrying capacity was constructed it must be asked what use it would be. The concept of carrying capacity may only be used to indicate a maximum population which might have been fed from an environment. In the past this theoretical maximum may not have been reached or it may have been exceeded by human societies. It cannot be known which, unless an independent estimate of past levels of population can be generated and compared with the theoretical environmental constraints. Carrying capacity is only a single factor in the complex field of man - environment relationships. For example, in the period and region under consideration survey work has revealed that in the sixth century BC a large scale trade in agricultural produce developed (Perkins and Walker 1990, 67-75). This can be seen as a social, technological, cultural and economic strategy that reduces the necessity to live within the limits of a local environmental carrying capacity and the variability of annual yields. Limitations of the notion of carrying capacity as a determinant of past population densities may be seen even more clearly by considering the city of Rome at the end of the first millennium BC. The city was large, and certainly outstripped even the most optimistic estimate of the carrying capacity of the Latial plains. Nevertheless, the city flourished as a result of a whole series of social, economic, social, technological and cultural adaptations, if the Roman Empire may be so described, which in effect extended the potential hinterland of the city to the entire Mediterranean basin. This exaggerated example serves to illustrate the point that on its own the carrying capacity of a region is only of limited interest. What is far more important is the study of the relationship between the density of past human populations and the productive potential of their regional environments.

In this study the carrying capacity of the region is not investigated, sufficient environmental data has not been collected. An alternative approach is taken here, derived from a consideration of diachronic change in settlement patterns. The stages in the reconstruction of the population estimate are detailed below and consist of:

1. Definition of a region and the adoption of a suitable sampling and survey strategy to enable a coherent regional data set to be obtained by field work.
2. Analysis of the variability of the range of contacts made with the archaeological record during survey work.
3. Dating of identified remains.
4. Reconstruction of past settlement patterns and establishment of relationships between surface scatters and sub-surface remains.
5. An estimate of likely population densities at each identified site.
6. An estimate of population density in the whole settlement pattern.
7. Extrapolation from the samples to the whole region.

The first four stages of this process have been presented in Chapter 3 and the following sections carry through the remaining stages of the reconstruction.

Settlement evidence

An attempt has already been made to calculate one part of the population of the valley by estimating the population of the city at Doganella (Perkins and Walker 1990, 64-5). Walker considers various means of estimating the population of the city, one based on the area inhabited and a generalised density of population in pre-industrial cities, another approach is based upon extrapolating from the density of buildings in the excavated parts of the late Etruscan city at Marzabotto and a third based on an extrapolation from the average surface area of a single farmstead in the valley. The last two of these view the surface area of the scatter of pottery that is Doganella as consisting of an estimable number of houses, which may then be equated with households. With an estimate of the number of individuals in a household an estimate of the overall population may be arrived at. At Doganella the various methods employed produce a population estimate of 8,000 to 15,000 souls. Of these techniques the first depends on an arbitrary density of population not defined by any evidence from the Etruscan period and the second assumes that Doganella was as structured and densely occupied as Marzabotto, an hypothesis yet to be proved. Of the techniques perhaps the last is the best. The calculation of the size of the population is derived solely from the evidence of the survey itself and the major variation in the model is caused by the estimate of the number of individuals constituting a household. Walker chooses 8 (Perkins and Walker 1990, 64), which is perhaps too high, five or six may be safer if we are dealing with a population with a life expectancy at birth of 25-35. This reduced figure would indicate a population of 5 - 6,000 for Doganella. Walker develops the argument further and analyses the chronological development of the population in a later essay using this last technique (Walker in press). Here Walker uses sites in the sampled transects which were certainly occupied (according to preliminary dating given before the detailed work on the ceramics presented here) and allocates 1 family to a house site, 2 families in a house2 site[21], 10 families in a villages site and 0.5 families in a house or tomb site. The population changes at the centre are less straightforward to calculate, and Walker calculates 1500 families in Doganella in the fifth and fourth centuries, and arbitrarily half that figure in the sixth century. Working from the enclosed area at Ghiaccioforte and the approximate area of the house partially excavated there (Rendini 1985) 50 houses are assigned to this centre, the same number are assigned to Talamone, similarly, working from the enclosed

[21] House 2 is used in the survey report to designate a surface scatter containing domestic refuse and tile larger than 625m^2 with abundant building material. The category has been dropped in this study as it is considered to bee too dependent on the extent of ploughing at a site, for the more ploughed a building site the more debris that would be found..

area Orbetello is assigned 113 families and Saturnia 160. The figures calculated by Walker are summarised as:

Table 7.1.1 Population estimates for the valley (after Walker in press)

Century	Rural Families	Urban Families	Population
VII	220	0	1100
VI	397	1000	6985
V	340	1973	11565
IV	225	1973	10990

Walker observes the great increase in population this represents, and also the high proportion of urban population. These figures were based upon provisional dating of the sites and the following is a reworking of the calculations derived from the more accurate dating of the sites following the full study of the ceramics. The same figures as above are used with the addition of 0.5 families per scatter, 2 families for a Roman house2, 1 family for a house2/necropolis, 4 families for a house2/Villa, 7 families for a villa and 10 families for a port. These estimates are derived from excavated remains in the valley, an Etruscan farm at Podere Tartuchino (Attolini and Perkins 1992), Giardino Vecchio a Roman farm (Celuzza 1985) and Settefinestre, a Roman villa (Carandini 1985b). For the types of site which have not been investigated by excavation the population has been estimated with reference the excavated sites. The number of families is multiplied by five to represent number of individuals, and by five again as the sites listed are only those within the 20% sample of the valley, except for the centres, to arrive at a notional figure for the valley as a whole. The results confirm the general pattern found by Walker but increase the precision and the reliability of the previously estimated population. The estimates are presented in the tables below century by century. The figures represent only the certainly occupied cites in each century, that is those with a 'good' likelihood of being occupied in that century. The figures therefore represent an estimate of the minimum population in each century.

Table 7.1.2 7th century BC population

Site type	Number	Families	Population
House	18	18	450
House/Kiln	1	1	25
House/Tomb	23	11.5	287.5
Minor Centre[22]	2	100	500
Scatter	3	1.5	37.5
Village	5	50	1250
Village/Kiln	1	10	250
Total	53	192	2800

Table 7.1.3 6th century BC population

Site type	Number	Families	Population
City[23]	1	1288	6440
House	33	33	825
House/Kiln	2	2	50
House/Tomb	36	18	450
Minor Centre[24]	3	213	1065
Scatter	7	3.5	87.5
Village	6	60	1500
Village/Kiln	1	10	250
Total	89	1627.5	10667.5

Table 7.1.4 5th century BC population

Site type	Number	Families	Population
City	1	1500	7500
House	35	35	875
House/Kiln	1	1	25
House/Tomb	40	20	500
Minor Centre	4	373	1865
Scatter	6	3	75
Village	7	70	1750
Village/Kiln	1	10	250
Total	95	2012	12840

Table 7.1.5 4th century BC population

Site type	Number	Families	Population
City	1	1500	7500
House	21	21	525
House/Kiln	1	1	25
House/Tomb	25	12.5	312.5
Minor Centre	4	373	1865
Scatter	2	1.5	37.5
Village	6	60	1500
Village/Kiln	1	10	250
Total	61	1979	12015

[22]Talamonaccio and Ghiaccioforte.

[23]Doganella, number of families is derived from a calculation of the maximum extent of the surface scatter divided by an average of 600m^2 for each house. In this century it is further weighted by the ratio of sites with sixth century tile to those with late tile (73:85) based on Perkins and Walker 1990, Fig. 13 and 17.

[24]Talamonaccio and Ghiaccioforte and Orbetello which is included even though it is not in a sample.

Table 7.1.6 3rd century BC population

Site type	Number	Families	Population
City[25]	1	88	440
House	6	6	150
House2	3	6	150
House/Tomb	15	7.5	187.5
Minor Centre[26]	4	323	1615
House2/Necropolis	1	1	25
House2/Villa	1	4	100
Port	1	10	250
Total	32	445.5	2917.5

Table 7.1.7 2nd century BC population

Site type	Number	Families	Population
City[27]	2	248	1240
House	54	53	1325
House/Kiln	1	1	25
House2	29	58	1450
House2/Kiln	2	4	100
House/Tomb	34	17	425
Minor Centre[28]	3	163	815
House2/Necropolis	1	1	25
House2/Villa	3	12	300
Villa	24	168	4200
Villa/Kiln	3	21	525
Village	4	40	1000
Village/Kiln	2	20	500
Port	2	20	500
Scatter	2	1	25
Total	166	827	12455

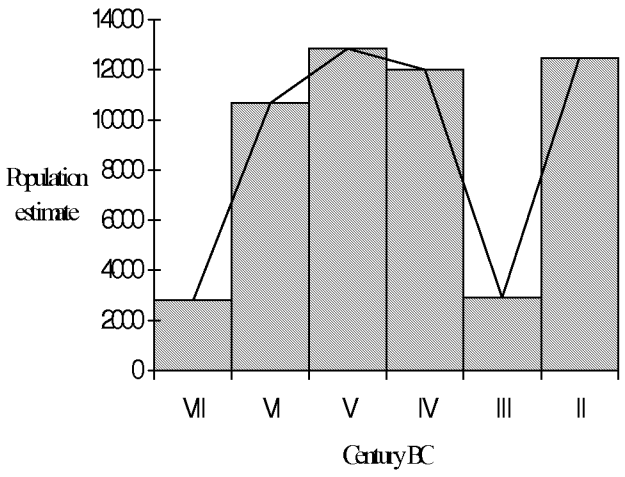


Fig.7.1.1 Summary of estimated population history, seventh - third century BC

[25]Cosa, the population is calculated on the same basis as the minor centres, i.e. on their surface area.

[26]Talamonaccio, Orbetello and Saturnia.

[27]Cosa and, Saturnia.

[28]Talamonaccio and Orbetello.

The graph shows four major features, a rapid increase in the size of the estimated population between the seventh and the sixth centuries, a stable population between the sixth and the fourth centuries, a drastic fall in estimated population in the third century and a rapid growth between the third and the second centuries. Each of these features will be considered in turn.

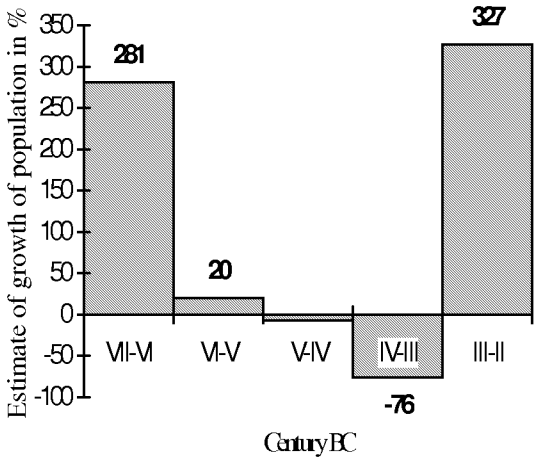


Fig.7.1.2 Estimated population growth

Table 7.1.8 Estimated population growth

Century	Population growth rate *per annum*
VII-VI	2.81%
VI-V	0.2%
V-IV	-0.07%
VI-III	-0.76%
III-II	3.27%

The sixth century population explosion and stabilisation

The estimate for the population of the seventh century is 2,800 souls and the estimate in the sixth century is 10,667, this represents nearly a fourfold increase, in percentage terms a 281% increase in the size of the population. This increase compares extremely closely with the 297% increase in the raw number of sites in the south Etruria survey area between the 10th-8th century and the 7th-6th centuries (Potter 1976, 74), this is not really comparing like with like but a parallel population increase in other areas only reinforces the significance of the change. The estimated increase in population in the Albegna Valley and Ager Cosanus equates to an annual growth rate of 2.81%. A similar rate of increase, 3-4%, has been suggested for Attica at the end in the eighth century (Snodgrass 1977). The suggestion, based on the number of graves found in Attica, has since caused much debate, the method has been criticised as has the scale of the proposed growth (Morris 1987, 72, 156-9), although Morris does acknowledge there was growth and that similar patterns of growth can also be seen in the Euphrates Valley and south

Etruria. In turn, the position of Snodgrass has been defended at some length by Sallares (1991, especially 84-90) who convincingly demonstrates that population growth rates of around 3% are perfectly feasible in the ancient world. All this suggests that the figures derived from the Albegna valley are a credible estimate for population growth.

The viewpoint of Sallares (1991, 50-107), who considers humans as a biological population living out their history in an ecosystem just like any other organism, provides insights into the possibilities of the mechanism and possible causes of this population explosion. Sallares identifies two key periods in Greek population history, one in the eighth century when the human population of Attica was able to expand like bacteria on a dish, unrestrained by cultural or economic limits, and a second in the fourth century when the population stabilised at a certain limit. All of this took place within the environmental constraints, of the landscape, resources and climate of Attica.

If these ideas are carried to Etruria the figures from the Albegna valley may be interpreted as showing rapid growth of population through the seventh century, even more dramatic when the very thin evidence for settlement in the eighth century is considered. Then population quickly expanded to fill the sparsely inhabited valley and even the large city at Doganella by the end of the sixth century. From then the population stabilised as the population had grown to the limits sustainable within the environmental constraints of farmable land and the potential of production using the current techniques, crops and technology. This reconstruction suggests a high degree of biological and environmental determinism for the development of population but in matters of population growth in a pre-industrial society perhaps this is desirable, as Sallares is keen to point out (Sallares 1991,66-7). Perhaps the most important point to draw from this reconstruction is that population did not grow in isolation, it may be seen as part of a much broader social and cultural process of development, for the growth was synchronous with the development of urbanism, intensive agriculture, and transition from the Orientalizing period to the Archaic, with all that this entailed.

Population fall in the Third century

A large proportion of the fall in estimated population from over 12,000 to under 3,000 is caused by the exclusion of the city at Doganella, destroyed by the Roman conquest, from the calculation. However, the loss of Doganella only accounts for a change of 7,500 in the estimate, the remainder of the drop is in the rural population. The most obvious explanation for this fall is the Roman conquest of the Albegna Valley. The conquest is not documented but would seem to have occurred around 280BC (Carandini 1985; 1988, 225-34). The population estimates suggest that 75% of the population 'vanished' at this point. Evidence from the valley indicates that Doganella, Saturnia and Ghiaccioforte all met violent ends. Does this indicate that the Roman legions may have killed 75% of the population, 9,000 people? Not necessarily, the method of estimating the population depends on estimates of the number of people at each inhabited site, if this were to suddenly increase, caused perhaps by movements of refugees from a destroyed centre to a surviving one the method would not detect this redistribution. Another hypothesis might be that the population was deported by the Romans. A consideration of Roman comportment towards conquered Italians may help shed some light on the drop in population. Generally, Roman armies do not seem to have destroyed cities that were conquered. Accounts are not specific, but punishments seem to have consisted of confiscation of land or sanctions against the ruling classes, for example at Antium or in addition at Velitrae the walls were torn down (Salmon 1982, 48). In the accounts of wars with Etruscans there is little mention of violence towards populations: casualties there were, along with imprisonments, for example in Livy's (37.3) account of the fall of Roselle in 294 where less than 2,000 were killed and more than 2,000 captured (Harris 1971, 75). The exceptions to this pattern are Volsinii and Falerii, where the populations were deported, and at Falerii 15,000 dead are reported (Harris 1971, 115-8; Salmon 172-4). Thus mass killing and deportation although unusual, are attested, and in more detail than most of the other conflicts with the Etruscans. These cases suggest that the population drop could be a result of unrecorded Roman action.

Population growth at Romanization

Whatever the cause of the estimated population drop in the third century, which the Hannibalic wars may also have contributed to, the levels of population rapidly return to the pre-conquest levels, and indeed they go on rising in subsequent centuries. The rate of increase estimated at 3.27% *per annum* is high, but possible (Sallares 1991, 84-90). This may once again be the partially the result of natural increase as in the seventh century, in the areas depopulated by the Roman conquest. However, we do have evidence for the arrival of new population in the colonies established at Cosa, Saturnia and Heba (although the latter was not included in the population estimate as it is not certainly settled in this period). Details are scarce but at least Livy reports 1,000 new colonists for Cosa in 197 BC (Harris 1971, 158), colonists were also sent to Saturnia in 183 but their numbers are not known. The new settlers alone would not account for the entire estimated increase in population but their presence helps to explain the high percentage growth rate. The destroyed Etruscan city at Doganella is not refounded as a Vosinii or Falerii, instead a Roman Colony was planted at Cosa.

Location of population

Calculating the proportions of the estimated population in the city and minor centres compared to the estimated number of the rural population produces the following figures.

Table 7.1.9 Location of population

Century	Urban Population	Rural Population
VII	17.9%	82.1%
VI	70.0%	30.0%
V	72.9%	27.1%
IV	77.9%	22.1%
III	70.4%	29.6%
II	16.5%	83.5%

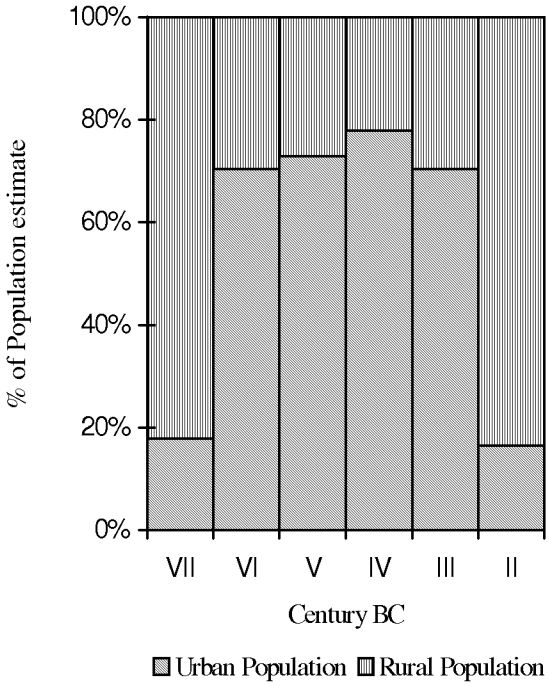


Fig. 7.1.3 Proportions of rural and urban population

In the seventh century the vast majority of the population lived in the country in either isolated farms or villages, only 17.9 percent lived in the two centres certainly occupied in this century, Talamonaccio and Ghiaccioforte. This ratio changes significantly when the city at Doganella and Orbetello are certainly occupied in the sixth century, at this point the proportion living in the urban centres jumps to 70% and continues to grow into the fourth century. Even in the third century when there is a large fall in the size of the estimated population the proportion of town to country dwellers remains more or less constant at 70%. In the second century, with Talamonaccio, Orbetello, Saturnia and Cosa as the centres the proportion is reversed, only 16.5% of the population lived in the towns, a similar proportion to that in the seventh century. In the first century this proportion of population in the towns would be even smaller because despite the foundation of a new *Colonia* at Heba which may be included in the calculations, the centres at Talamonaccio and Orbetello were abandoned and there is an increase in the number of rural settlements. During the Etruscan period then, once the city was established, over 70% of the population lived in the city and minor centres. This is a high proportion and the issue will be returned to later.

This set of calculations reveals that the estimated population of the region varied between about 3,000 and 13,000 souls in the period under consideration, that is between 2 and 9.5 people/km^2. The most striking observations to be made are that these figures are small: few people lived in the valley in the Etruscan period. During the Etruscan period, once the urban centres had been established most of the population lived in those urban centres. Although the countryside was settled in the Etruscan period it was thinly populated, a minority of the population lived in the countryside until after the Roman conquest. The figures remain an estimate but they do provide an order of magnitude and a development through time. The figures also show a pattern of variation which is consistent with both human population dynamics and the known history of the area. This does not indicate that they are necessarily an accurate estimate, but only that they provide a plausible estimate.

7.2 Society, Urbanism and Territory

The Etruscan period sees the development of the first urban centres in Etruria[29]. The surface finds provide evidence for the date of the first urban centres in the Valley. Unlike most Etruscan cities there is no evidence for Villanovan or Orientalizing settlement on the plateau of Doganella. The earliest pottery indicates sporadic frequentation of the area in the seventh century, as in the Soprintendenza excavations (Michelucci 1984; 1985,111). The earliest material does not seem to be concentrated in one, or even several nuclei but is thinly scattered throughout the area of the city. This pattern is not typical of Etruscan centres. The origins of Etruscan cities have long interested scholars, current reconstructions (e.g. d'Agostino 1985) influenced by Torelli (Torelli 1987, 35-74), envision groups of villages in restricted, defensible locations becoming united into single large communities some time around the middle of the eighth century. The best evidence for this is from the site of Veii, and the cemeteries of Cerveteri and Tarquinia where small individual cemeteries come together to form larger groups led by an elite within society (Bartoloni 1989, 191). Since this trajectory was proposed evidence has become more detailed and the chronology more precise. Emphasis has also been placed upon Bronze Age antecedents to the Iron Age villages and some late Bronze Age material has now been found at all the city sites of south Etruria (Stoddart 1994). A further strand has been an attempt to tie the development of the city into the development of the settlement pattern as a whole. Di Gennaro has contrasted the distribution of many small Bronze Age sites with few large Villanovan sites through the use of Thiessen polygons to define territories around the sites (Di Gennaro 1982). Consideration of this same phenomenon has also led to the suggestion that perhaps as many as 20 Bronze Age villages came together at the future site of Tarquinia to form a Villanovan centre of several thousand people (Peroni 1985). Evidence for the origins of Cerveteri, Tarquinia and Vulci has recently been analysed with reference to the settlement of their territories in a comparative study of state formation in southern coastal Etruria (Rendeli 1993). The current approach is to integrate evidence from the settlements and cemeteries with evidence from settlement patterns to produce a multi-faceted reconstruction of the process of city formation and social development. In the case of Rome literary sources are also brought in to support the arguments (Torelli 1981, 108-12; 1987, 55-63).

[29]This issue has been addressed previously in the publication of the city at Doganella (Perkins and Walker 1990, 76-7), parts of the following are adapted from that account, and from the report of the survey (Perkins in press).

Although Rendeli (1993) demonstrates that the subsequent histories of the territories of Cerveteri, Tarquinia and Vulci diverge the trajectory from the late Bronze Age to urbanism at these sites is generally taken to be the same. However, it must be stated that the immediate territory of any of these cities has not been subjected to systematic intensive field survey. Rendeli's accounts are based upon extensive survey and studies of portions of the Etruscan cities' territories, so a large portion of the discussion of Tarquinia is concerned with intensive survey work around Tuscania (Rendeli 1993, 221-82). The only city where intensive survey has been carried out is Veii where years of research during the South Etruria Survey has revealed a different pattern of development in the Ager Veientanus where rural settlements constantly increase from the late Bronze Age, through the Iron Age and on into the Orientalizing period (Potter 1979, 52-69; Ward-Perkins 1961). This may of course be a regional difference between inland and coastal southern Etruria, but only future research will tell if Iron Age settlement truly is lacking from the countryside of Etruria.

The evidence from the Albegna valley, where intensive survey has been carried out around the city, suggests the Etruscan city in the valley did not have Iron Age or Bronze Age antecedents, and rural settlements from these periods were extremely rarely found by the survey in the valley (Cardosa in press). Only 14 sites were dated to the late Bronze Age and 11 to the Iron Age, providing only thin evidence for interpretation. However, what does not seem to happen in this area is a concentration of settlement in the Iron Age into a single central site which then goes on to become a city in the Etruscan period. The most consistent evidence for settlement in these periods comes from the site beneath the castle on the hill at Marsiliana and from the Etruscan period villages at the mouth of the Chiarone. None of these sites go on to figure in the urban history of the region. The evidence from Doganella does not suggest a gradual development or synoescism as the origin of the city, rather the contrary, an *de novo* foundation and fairly rapid extensive occupation of the site.

An Iron Age background in the form of a cluster of villages may be lacking in the Albegna Valley but another element in the development of urban centres, the emergence of an elite, is very clearly documented at Marsiliana (Minto 1921). The cemetery largely dates to the first three quarters of the seventh century, and so it post-dates the development of a social elite in the later Villanovan period which is generally seen as part of the development of the Etruscan city, however the earliest graves do link the cemetery to Villanovan traditions. The richest depositions in the cemetery cease towards the end of the seventh century, just as the city is first occupied and chamber tombs become the normal place of burial. This fact has been used to reconstruct a political history of the valley in which the city of Vulci conquers the aristocracy of Marsiliana *c.*620 BC (Colonna 1977, 202; Michelucci 1984, 390-91). This hypothesis is seen as part of a wider process of expansion by the city of Vulci. Vulci style artefacts, wine amphorae and sculpture, and tomb types (chamber tombs '*a cassone*' with an open vestibule) are identified in the Albegna Valley and upper Fiora Valleys and used to suggest political control by Vulci (Colonna 1977, 203). This model is moderated by Cristofani in a paper given at the same conference (Cristofani 1977), where the artefacts and tomb type considered representative of Vulci are found to prevail only on the coastal plain around Pescia Romana, the Chiarone and Orbetello, and that the Albegna Valley only receives material from Vulci at a time when such material is most widely distributed, as do the sites of Chiusi and Orvieto (Cristofani 1977, 255). Nevertheless, this hypothesis of dominance by Vulci was developed before the city at Doganella was 'rediscovered' and the excavator of Doganella, Michelucci, employed the hypothesis to explain the presence of the city in the valley as a colony of Vulci, a suggestion apparently strengthened by the dilute and enclosed nature of the urban space. (Michelucci 1984, 390-91; 1985,113). If the city is seen as a planted colony then the problem of its lack of Iron Age roots disappears and the sudden dearth of gold and silver in the cemetery of Marsiliana can be explained. However, if the notion of Doganella as a colony is seen in the broader context of the development of the settlement pattern as a whole, which is now possible, the idea becomes less attractive.

At the broadest level the hypothesis is the result of the widespread tradition in Etruscan archaeology of tracing the 'influence' of cities via the territorial distribution of their products. This technique is the result of the combination of two elements. Firstly, the concept of Etruria dominated by its cities, a view which derives from the ancient sources which tell of wars between the cities and Rome and the deeply ingrained topographic study of Etruria where each city is seen as having its own history and archaeology (e.g. Dennis 1848, Banti 1973; Coarelli 1975). Secondly, the continuing dominance of culture-historical archaeology (Trigger 1989, 148-206) in Etruscan archaeology. Although the terminology may have changed the influence of a seminal article by the late Massimo Pallottino can still be discerned in many modern studies of the cultural development of Etruria (Pallottino 1939). This work defines a developed diffusionist model for cultural change in central Italy between the Villanovan and Archaic periods. Cultural 'elements' (types of artefacts) are typologically dated and grouped by association into a '*facies*' several of which may in turn come to be a 'cultural complex'. A place of origin may be established for each of these constituent parts, usually where they are most common and earliest. Typologically similar groups may have differing historical dates but these may be ascertained by either a *terminus post quem* or distance from place of origin. The engine which drives this model is 'innovation' and 'retardment'. The former is found in places where cultural elements or facies originate and the latter is found in socially inferior classes, areas less exposed to trade or geographically remote (mountains or islands). A complete sequence of cultural development may only be observed in centres of innovation since elsewhere the *facies* have diffused and follow their own parallel historical trajectory. *Facies* or complexes may be spatially coincident or 'genetically' linked to form 'cycles' (*cicli*) (Pallottino 1939, 88). Idealistically, Pallottino asserts that this scheme will '*restituire in una*

parola il quadro della vita protostorica nelle sue linee più verosimili e vicine alla realtà storica, libere da ogni schema deformante.' (restore, in a word, a picture of proto-historic life in its most likely form and closest to historical reality, free from any deforming scheme.) (Pallottino 1939, 89). The methodological preamble is followed by an astute and subtle survey of finds from the cemeteries of the cities of Etruria and exposition of the cultural development of Etruria. This culminates in the identification of regional cultural blocks at Cerveteri, Tarquinia and Vulci which are the centres of development in Etruria. This article, although rarely acknowledged, has been extremely influential and has set the pattern of study for a generation of scholars. The diffusionist tendency permeates studies of material culture (e.g. Maggiani 1985c), and studies are full of references to the influence of Vulci, Cerveteri or elsewhere (e.g. Martelli 1981b). Even the concept of innovation itself has been dusted down, given a new set of clothes and found to be useful in Etruria (Spivey and Stoddart 1990, 92-4).

The generalised adoption of these concepts, if not the methodology, leads to the ready equation of the presence of an artefact with an identifiable origin to political control by that place of origin (Colonna 1977). Thus the Albegna valley and coastal strip become part of the territory of Vulci following the finding of a limited range of pottery and tomb types nearby, and a city in the valley becomes a colony because it has not previously been identified as a centre of innovation. Such studies undoubtedly reflect the cultural and commercial influence of Vulci, yet their relationship to the political situation is far from clear. For example, the study of the repertoire of the Vulcentean 'Micali Painter' (Spivey 1987) reveals a clear distribution map of find spots, which are obviously centred around Vulci and decrease in frequency with distance. Now, at the limits of this distribution, the Albegna valley, for example, has yielded a few examples of this production, a fact which might be seized upon in support of the view that Vulci politically dominated this area, yet similar vessels are also present with the same frequency at the other limits of the distribution, at Chiusi and Cerveteri, and no one would claim that these were politically subservient to Vulci. This example illustrates the caution required in the political interpretation of the distribution of material culture.

Fig. 7.2.1. View the defences of the city at Doganella (the double bank to the left of the farm buildings).

The Etruscan city at Doganella has consistently been denied an independent history largely because it does not neatly fit into the established pattern of Etruscan cities. It does not have a strong natural location, it was not (apparently) a centre of innovation and diffusion of artistic grave goods, it is not (definitely) mentioned by Classical sources, and it did not have Villanovan origins. The city is however, after this field survey, one of the most closely investigated cities in Etruria, and only Veii has been subjected to a similar study (Ward-Perkins 1961). It should therefore be seen in the wider context of settlement history and social and economic development of Etruria as a whole rather than as a dependent settlement of Vulci.

The evidence collected by the survey allows a re-orientation of the issues. Rather than concentrating upon and interpreting the urban history in isolation, it can now be approached in the context of the entire settlement hierarchy. Furthermore, the settlement pattern, articulated into tombs, necropolises, small and large settlements and cities can be used as the basis for a social reconstruction, which may then form the basis for the interpretation of the city, and the social relationships and systems within them.

The survey area can be divided into three clearly distinct areas upon the basis of the settlement patterns and hierarchy, which coincide with the historical territories of the three Roman Colonies and the fundamental geomorphological divisions of the region. The coastal plain of the Ager Cosanus, closest to Vulci; the lower Albegna valley; and the upper valley.

There is limited continuity of settlement between the latest Iron Age and the Orientalizing period, however in the seventh century the settlement becomes more dense and widespread. Also in this period one can begin to see the development of different settlement hierarchies in the three regions of the survey area. In the coastal Ager Cosanus villages predominate, in the lower valley there is a mixture of villages and smaller settlements, whereas in the upper valley there is less nucleation, the hierarchy is solely of house and house/tomb sites. This developing hierarchy in the coastal areas is paralleled by the growth of an aristocracy. This process can generally be traced back to the early eighth century (e.g. Bartoloni 1989, 194-202), however in this area it does not become apparent until several generations later, but is spectacularly illustrated in the necropolis at Marsiliana (Minto 1921), and by the Eubean crater from Pescia Romana (Cristofani 1981,34). The settlement hierarchy would suggest political and social control of the larger settlements over the smaller, and therefore that land owning was the basis of the wealth of the aristocracy. However, in the case of Marsiliana the strategic location at the lowest natural crossing point of the Albegna must have played a role (Cristofani 1976,250). Rendeli comes to a similar conclusion concerning the settlements around Pescia Romana but the argument is developed from the starting point of Vulci and without the benefit of the results of the field survey (Rendeli, 1993, 167-74).

From the later seventh century the differences between the three areas becomes more marked. The coastal plain is characterised by small nucleated settlements, villages, particularly near the coasts, with only few smaller settlement sites. The necropolises seem to gravitate around these villages and smaller settlements. This clear settlement hierarchy presumably reflects a social hierarchy, with a local aristocracy exercising some form of political and social control over the lesser settlements. In the area of the lower Chiarone these villages are very close to one another (c.1km.). Therefore it is not possible to hypothesise a large territory around each village which provided sustenance for the nucleated settlements. Complementary to this dense settlement pattern are the apparently thinly settled highlands to the north of Pescia Fiorentina. However, it would seem unlikely that this area was not exploited for its pastoral and sylvicultural potential, and it perhaps should be seen as a likely extension to the spheres of influence of the coastal villages.

Perhaps better is a wider view whereby the territories of these villages are not defined by a zone of direct exploitation of the surrounding land, as would be predicted by an application of a miniaturised version of the Von Thunen model or the arbitrary application of Thiessen polygons (Chisholm 1979; Di Gennaro 1982, 106). If, rather than assuming a strict economic determination of the territories of these settlements, they are defined by social bonds, especially kinship and *clientela*, the structure and distribution of the settlements becomes more explicable. The clustering of the villages is no longer problematic, since they are not competing for economic resources, and similarly their co-existence with a scattered rural population implies a capillary, rather than centralised, farming of fragmented agricultural lands. Equally, these villages are all close to the sea, which along with the coastal lagoons will have been a rich source of food, and perhaps salt as well as providing opportunities for seafaring activity and trade.

However, the fact remains that these villages are relatively large nucleated settlements, and if each did not directly exploit its surrounding territory, strong social mechanisms of redistribution must have provided for the sustenance of the villages. It is perhaps here that it is possible to hypothesise the operation of a local system of *clientela* which supported the late Orientalizing and archaic aristocracy. Furthermore, in this area, the survey detected the presence of *cuniculi* which are presumably archaic, and are certainly indicative of communal enterprise, if not centrally controlled land improvement.

A further dimension is added to this social model when it is noted that several of these villages prove to have developed on the site of earlier Iron Age settlements. It would seem that the generally recognised process of the gradual stratification of society from the later Villanovan period onwards (Bartoloni 1989), led in this area to the development of extremely stable, small nucleated settlements, presumably dominated by traditional local aristocracies. This notion is reinforced by the association between necropolises and

individual settlements suggesting that the maintenance of traditional settlement location combined with a continuity of burial ground, with all that this implies about the power of ancestors, formed a tangible aspect of the deep rooted aristocratic structure of the society, articulated into small social groups, perhaps equivalent to the Roman *gens*, each settled in its own village, with a rural population strictly bound to it by the constraints of *clientela* (Torelli 1981, 71-9).

This model of social order cannot be considered in isolation since the great archaic city of Vulci is only some 15km to the north-east, and it is inconceivable that Vulci did not exercise at least political influence in this area. A precious indication of the political status of the area in a later period is provided by Pliny, who refers to the Roman colony as 'Cosa Volcentium' (Nat.hist. III 52), indicating that it was founded in the territory of Vulci. It seems likely that most of the coastal plain was under the political domination of Vulci even though the villages have their own Iron Age pedigree and develop in the area furthest from Vulci. This being established, it becomes necessary to relate the social order perceived in this area to that of the city of Vulci.

Nothing is directly known of the political and social order of Vulci (Pallottino 1984, 132). However, its Villanovan origins are clear, indeed, along with Tarquinia and Veii, it is one of the exemplars of the generally accepted process of synoecism seen in the development of the city. The picture is not clear but these fragmented origins suggest the presence of multiple social groupings within the Orientalizing city. The evidence for the marked concentration of wealth and a strong social hierarchy from the necropolises of Vulci attest to the development of a powerful aristocracy in the city (e.g. Sgubini Moretti 1981, 58-65). In addition, the gentilitial system of onomastics became generally adopted in Etruria in the second half of the seventh century (Cristofani 1973, 109-128; Torelli 1987, 46) and gentilitial chamber tombs are widely attested in the cemeteries of Vulci. Therefore, the gentilitial system was well established at Vulci, and perhaps its most famous members were Aulus and Celius Vibenna (Verrius Flaccus in Festus, 486 L; CIL, XIII, 1668). Beyond this, little is certain, but the grouping of the gentilitial tombs of Vulci into at least ten distinct necropolises around the city, a feature of other Etruscan cities too, may indicate the existence of social groupings more extensive than the *gens*.

At this point it remains to relate the urban to the rural social structure, in short, to investigate the nature of the political dominance of Vulci. Upon analogy with the better known Roman institutions, the mechanism which links these two structures may be *clientela* (Torelli 1981, 76-9). Overall a structure of social relationships can be perceived, and despite its undoubted complexity, a general outline can be drawn. The evidence from tombs indicates the presence of an elite in both the city and the country, and the concentration of wealth in the urban necropolises implies the dominance of the urban aristocracy. We can therefore reconstruct bonds of *clientela* between city and territory, with the *principes* of the urban *gens* protecting a *familia* which is in part constituted by the paterfamilias of the rural *gens*. As outlined above, these rural *principes* of the *gens* settled in the villages may also have operated a network of *clientela* with a *familia* scattered in the smaller rural settlements. Taking this model of a nested hierarchy for the relationships within society, the settlement hierarchy can be seen to reflect the social hierarchy. This is of course very close to becoming a circular argument, and takes no account of other possible social groupings, as for example the originally Roman *curia* with its religious, political and territorial bonds, yet it serves as a framework for the interpretation of the settlement pattern in terms of social dominance.

A recent study of the same area provides a variation upon this theme (Rendeli 1993, 157-220). This study, without the benefit of intensive field survey and therefore no knowledge of the early villages around the mouth of the Chiarone, takes the presence of the rich tombs at Pescia Romana as an indication that the territory of Vulci was settled for the first time since the Bronze Age in the second half of the eighth century. The identification of the Vulci style '*a cassone*' tombs is taken as indicating that gentilitial groups moved in to the territory, bringing their material culture and forms of representation with them. The evidence from the survey must modify this reconstruction and if the gentilitial groups of Vulci did 'clone' themselves (Rendeli 1993, 168) into the countryside it was earlier than Rendeli suggests. More convincingly, Rendeli suggests that the minor centres in the upper valley of the Fiora at Castro, Sovana, Pitigliano and Le Sparne / Poggio Buco also had their origins in the early seventh century due to the multiplication of the gentilitial groups of Vulci. With a sensitive eye to the landscape Rendeli suggests that these settlements were replicating the location of Vulci since they share similarities of location on tufo plateaux (Rendeli 1993, 168-71).

We may then gladly allow Vulci control over the Fiora valley and most of the coastal strip. The distribution of settlement sites seems to indicate that the western part of the area, closest to the future site of Cosa, was very thinly settled. This settlement vacuum could indicate some form of frontier between the territory of Vulci and the Albegna valley. The possibility of identifying a boundary to the territory is lent some support by the identification of an undated chain of fortified hill tops to the north west of the coastal strip (described in chapter 3) and the fortified sites on the potential northern boundary of the territory along the banks of the Olpeta (Rendeli 1993, 212-20).

Having defined and circumscribed the society and settlement of the areas closest to Vulci in the Orientalizing period, we should return to the Albegna valley and the origins of Doganella. Once the city is established there are few finds from the city and the lower valley which indicate large scale influence from elsewhere. One of the more sensitive indicators, tomb types, certainly do not indicate influence from Vulci, if anything the constructed chamber tombs under a tumulus are closer to those of coastal northern Etruria.

The best known feature of this area are the necropolises at Marsiliana and to the south of Magliano, both originally

studied by Minto (1921, 1935). In both cases, the quite remarkable concentration of tombs in this area has been taken to indicate the presence of urban centres. Marsiliana has been associated with Caletra, an urban centre whose existence has been postulated from Pliny's and Livy's references to an Ager Caletranus (N.H. III.v.52; Hist. XXIX,LV,10) (Cristofani 1981, 97; Michelucci 1983, 452-3; 1984), but the survey found no such centre, and therefore the necropolis of Banditella at Marsiliana should be interpreted in a non-urban context. The burials, discussed in chapter 4, can plausibly be taken to document the leading members of a nascent *gens* through the seventh century, perhaps housed in a '*palazzo*' akin to Murlo[30] (Phillips *et al.* 1985, 64-154), which may well be the site at Uliveto di Banditella (MAR9), where recent excavations have revealed the remains of terracing (Michelucci 1983, 452-3;1991, 354; in press). The rich *tombe a fossa* cease towards the end of the seventh century but the chamber tombs, unfortunately violated in antiquity, attest to a continued use of the necropolis well into the sixth century. Much has been made of this fact. At the extremes, Colonna (1976 p.203) asserts that Vulci could not tolerate the existence of an aristocratic Marsiliana and so destroyed it, c.620 BC, whereas Cristofani (1981 p.98) prefered a slow decline at the end of the century.

Coincidental with the reduction in the quality of aristocratic burials at Banditella a vast chain of tumuli with partially constructed chamber tombs develops the hills around Marsiliana This density of family tombs clearly reflects the increasing density of rural population. Thus regardless of the fate of the *principes* buried at Banditella the continuity of the subordinate classes seems assured. Indeed, without the need to invoke catastrophe or decline, neither of which are implied by this continuity, perhaps what has changed is simply the location of the *princeps*. Certainly, in the later Orientalizing and Archaic periods wealth such as that displayed at Banditella is more commonly found in an urban context, and rather than falling foul of Vulci, maybe the aristocracy became urbanised by establishing an urban centre at Doganella. Indeed, in the light of the evidence from Murlo, albeit later, for the deliberate and ritual abandonment of phase II of the gentilitial centre (Phillips et al. 1985, 64-5; Torelli 1987, 67-8), perhaps such a hypothesis is not as unlikely as it at first seems. Taking the broader view provided by the field survey, the rich burials cease at a time of rapidly expanding population and agricultural production. In such circumstances a relatively small gentilitial group could rapidly expand a network of *clientes* through the territory as it was settled and as the population was expanding so rapidly, at least doubling in the course of a century. At this rate the bonds of kinship could easily be maintained across the span of four generations and provide the possibility of a widely distributed population having a restricted set of common ancestors. In this way the rural population, and indeed the urban population, could have the necessary social cohesion, caused by kinship, to form an urban community. This is obviously in the realm of hypothesis, but it is coincident with the switch from individual inhumation to burial in a communal (family) tomb suggesting an increased emphasis on a family identity rather than the individual identity represented in the '*tombe a fossa*'. None of this rules out the possibility of settlers from elsewhere coming into the valley, but the study of the population has indicated that the growth in numbers would have been possible without immigrants or colonists.

The problems of the urban history of the valley have been further complicated by the presence of the tombs around Magliano, which since the 1930's have been considered indicative of an Etruscan centre at the site of the Roman colony of Heba (Minto 1935; e.g. Banti 1973, 117-8). A fascination with tomb archaeology led to the assertion that the lower valley '*accolse un insediamento a Doganella, quasi in aperta campagna, diretta emanazione di un più grande centro, correspondente a Magliano*' (held a settlement at Doganella, almost in open country, a direct emanation of a larger centre corresponding to Magliano) (Cristofani 1981,38). Confusingly, Cristofani (1977, 237) has astutely noted that the chronology of these tombs, which date between the end of the VII and the third quarter of the VI, is unlike that of urban necropolises and furthermore that the lack of a centre, confirmed by the survey, implies a '*populazione fosse organizzata in nuclei paganici*' (a population perhaps organised into nucleated rural settlements) related to agricultural production (Cristofani 1977, 250). However, both of these mutually contradictory suggestions may be discounted as in this area the settlement pattern recovered consists of a consistent scatter of house sites with some house/tomb sites, similar to that of the Elsa valley, with no trace of rural centres such as are to be found in the northern part of the territory of Cerveteri (Torelli 1981, 112-3) nor of villages found in other parts of the survey area.

If centres may be discounted, the density of tombs in the area still has to be accounted for. Geology and differential preservation and detection have been discussed above in Chapter 4 but when seen in the context of the valley as a whole, the tombs of Magliano and the chamber tombs in the vicinity of Marsiliana, still form two distinct concentrations of necropolises. Perhaps, if they are seen as two large communal burial grounds serving the scattered rural community, rather than a series of nearby necropolises for nucleated rural settlements a more satisfying interpretation can be reached.

[30] The excavator of Murlo must have the last word on this, and if the structure at Murlo is best seen as a meeting hall so be it (Phillips 1993, 81-3).

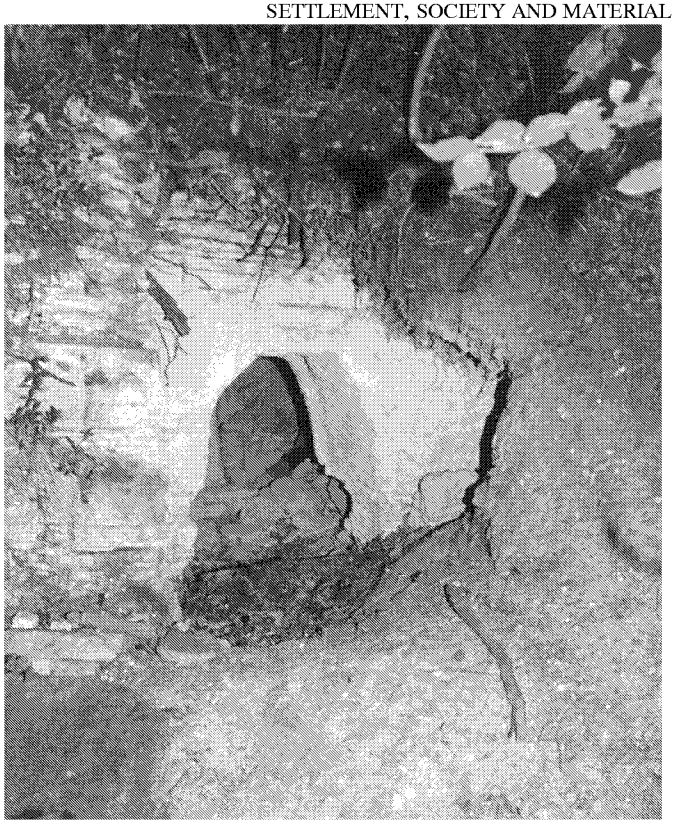


Fig 7.2.2. Chamber tomb near Magliano

Direct evidence for Etruscan rural social groups is scarce; an indication is contained in a passage of Livy (VI 5,8) which implies that Roman territorial tribes developed in the fourth century, after the conquest of Veii, in formerly Etruscan or Etruscan influenced territory - the Stellatina, Tromentina, Sabatina and Arnensis, suggesting that rural tribes existed in Etruria (Sordi 1976, 124-5). Both of these instances imply that there was some Etruscan correlate for the Roman tribe. Palmer identifies one certain Etruscan '*curia*' (Palmer 1970, 40), this is the Septem Pagi on the north bank of the Tiber which, according to the tradition handed down by Dionysius of Halicarnassus and Plutarch, formed a bone of contention between the Romans and the Veientines and is particularly interesting since the name implies the archaic synoecism of a scattered rural population with a common social identity. One can only speculate upon the nature of these archaic *pagi*, since the Ager Veientanus does not seem to have incorporated minor centres (Potter 1979; Torelli 1981, 113-4), they may have been isolated settlements, individual social groups, gentilitial or otherwise, or simply toponyms.

It would seem plausible to relate the complexes of necropolises around Magliano and Marsiliana to a social structure, rather than to a settlement pattern, be it dispersed or nucleated, since the results of the survey do not allow anything like a one to one relationship to be established between necropolises and settlements, furthermore the survey did not detect necropolises associated with individual settlements in the Magliano and Marsiliana areas. In these necropolises there is no evidence of a high degree of social stratification, as witnessed in the Banditella necropolis, each deposition displayed a similar, degree of wealth. A similar contrast between Orientalizing and Archaic burials is familiar from the urban necropolises of Southern Etruria, and is generally taken to indicate an increase in egalitarianism, the rise of a 'middle class' and the development of the citizen state (Pallottino 1984, 185-8). Indeed, such tendencies are the hallmark of the development of the Archaic city-state, but in a rural context this process raises fundamental questions about individual status and rights, land ownership and economic dependence. In the absence of an urban focus, the communal nature of the necropolises must be the expression of a different form of community, the settlement evidence would suggest that this was territorial rather than related to individual settlements, and the similarity of the tombs and their contents implies a community of ritual and religion. Equally, the lack of social stratification in the cemeteries, mirrored in the minimal rural settlement hierarchy, suggests lessened gentilitial domination within these social groupings in the lower valley.

In the cemeteries of Magliano and Marsiliana, we have seen evidence for strong social cohesion, with a territorial base; in both cases the evidence for this cohesion ceases with the fifth century. From at least the mid VI a different form of cohesion is made manifest by the evidence for communal unity embodied by the city. The relationship between these two expressions of social groups is not clear, but if a common social identity is taken as a *sine qua non*, the development of the city can be seen as the urbanisation of the rural social groups. At this point a conflict within the sixth century evidence is that in the communal cemeteries the chamber tomb depositions do not demonstrate the presence of a politically or economically dominant elite, whereas the economic and settlement evidence indicate highly centralised control of production and distribution. Similarly, neither the field survey nor the excavations at Doganella (Perkins and Walker 1990; Michelucci in press) have revealed evidence for extreme social differentiation, and only modest chamber tombs in small tumuli are known from the necropolises (Francois 1851), yet there is no rural settlement hierarchy, which implies a centralised political control of the countryside. Given the apparent absence of an urban aristocracy to act as centralised landowners a more egalitarian and institutionalised, but still strongly urban society may be hypothesised, perhaps similar to those hypothesised in contemporary Vulci and Volsinii (Cristofani 1977, 255; Pallottino 1984, 172,187).

The settlement pattern and distribution of necropolises in the valley of the Radicata seems to display a mixture of characteristics of the coastal Ager Cosanus and the lower Albegna Valley, with a clear hierarchy of rural settlements, but the necropolises do not seem to be strongly attracted to the settlements, indeed the density and ubiquity of necropolises begins to take on the aspect of a communal burial ground extending through the whole valley. This can be perhaps be interpreted as a transitional zone between the patterns generated along the coast by urban gentilitial domination from Vulci, and the strongly territorial, but dispersed patterns generated by the rural communities of the lower valley.

As mentioned above, in the lower valley, with the exception of the Radicata, the rural settlement shows remarkably little hierarchisation: only house and house/tomb sites are present, and the latter are rare. Presumably the over-riding influence is the development of an urban centre at Doganella which produced a highly centralised settlement pattern, precluding the development or survival of nucleated rural settlements. The survey of the hinterland of this city has revealed a consistent pattern of rural settlement, this is particularly clear to the north of the city, where farm sites with associated necropolises develop in tandem with the city and by the fifth century are evenly distributed through the territory. The ceramic material from these sites indicate that this pattern is contemporary with the city, although some of the sites were also occupied in the VII. This demonstrates that the development of the city was not at the expense of the country, as hypothesised by Michelucci (1985, 133b; 1991c, 49-52), on the evidence for the abandonment of the Magliano and S. Donato necropolises.

The centralising tendency represented by the development of the city is paralleled by a solidification and hierarchisation of the structure of the settlement pattern. The rural settlement is generally undifferentiated in the seventh century, but soon, along with the major settlement at Doganella three minor centres develop, at Talamonaccio, Orbetello and Ghiaccioforte, at the boundaries of the territory of the city as determined by the distribution of the Doganella amphorae (Perkins and Walker 1990, Fig.24; see below). The settlement complex at Talamonaccio and Bengodi has a complicated history (see Chapter 3), but it clearly acted as a maritime outlet for Doganella, if not an *emporion*. The role of Ghiaccioforte is less clear, but its site, a large flat hill top, and obviously strategic location at the junction of the upper and lower valley, suggests a function of control of the routes of communication between the upper valley and the coastal areas (Rendini 1985,131-2).

One feature which these centres share, along with Doganella (if at least some of the architectural terracottas can be taken as indicative of temples), is the presence of archaic sanctuaries (Cappelli 1930, 300-1; Mazzolai 1984, Tav.12 top; Rendini 1985,132; Rendini in press; Ciampoltrini in press; above). The contemporary development of these religious centres indicate that along with the political, social and economic structures, the religious structure was also re-ordered and centralised. The implication is that religious practice is closely associated with urbanism, and indeed it forms one aspect of political control in itself. Elsewhere in Southern Etruria, both urban and religious structures become regularised in the late Orientalizing period (Torelli 1987, 52), it would seem that these phenomena appear in the survey area about a generation later.

In the upper valley the pattern is somewhat different. There is no evidence for a centre at Saturnia (Michelucci 1982; in press) until the fifth century, whereas the necropolises of Pian di Palma date from the early seventh to perhaps the mid-fifth, (Michelucci 1982, 67; Minto 1925), as at Magliano and Marsiliana the necropolises on the north bank of the Albegna should perhaps be considered in a non-urban context. Meanwhile the evidence from the necropolises of Sede di Carlo (late VIII to 3rd. quarter VII) and Sterpeti (mid-VI to III) (Minto 1925, 630-44) indicates links with the later Villanovan period and that there was probably some form of settlement on the hill of Saturnia before the fifth century.

Once again it seems to be possible to interpret the Pian di Palma tombs as a burial ground for a rural social group. The cemetery is extensive and the monumental tumuli which contained as many as seven or eight generations of family depositions are grouped into various, possibly gentilitial, nuclei (Michelucci in press), the overall organisation of the cemetery is very similar to that of Magliano even if the tombs are of a different type. Furthermore, away from this cemetery tomb sites are rare and there is little evidence for necropolises associated with individual settlement sites.

In relation to this, ancient sources give Saturnia a Pelasgian origin (Dion.Hal., I,20) and the name of a *populus*, the Aurini or Urini, rather than a toponym (Pliny Nat.Hist. III,52). The Pelasgi are unfortunately lost in myth, but it is tempting to see Pliny's Aurini as corresponding to a rural community, later urbanised into the city which became Saturnia.

In contrast to the lower valley, the landscape around Saturnia displays a hierarchy of settlement, house and house/tomb with a village further north on Poggio Semproniano. However, there is no evidence for gentilitial tombs in this area, unless the clusters of tumuli in the communal cemetery at Pian di Palma can be interpreted as such. Indeed, as Michelucci notes (1982), the tumuli do not display the conspicuous wealth seen at Marsiliana, and each tumulus yielded a similar quality of material culture, suggesting that the rural community did not become dominated by an aristocratic *gens*.

Nevertheless, both the necropolises and the settlement pattern do indicate that society was stratified, but there is less indication of a highly centralised landscape, as seen in the lower valley, suggesting that relations of dominance within the local social hierarchy were less developed in the upper valley.

8. Exchange and distribution of ceramics in the survey area

Unlike the ceramics from an excavation, sherds collected during field survey are not stratified. This makes it very difficult to date sherds and to reconstruct ceramic assemblages. Dating evidence is by association only, if a sherd is found with a datable sherd of bucchero it can be assumed to be from the same period as the bucchero. However, if a sherd is found with bucchero, fine creamware and black gloss ware it is not possible to date the sherd more closely than after the earliest date for bucchero and before the latest date for the black gloss; perhaps a period of five hundred years. Occasionally a site is found where the period

of occupation is short and a group of pottery can be closely dated. But such sites are rare and they are often tombs, which does not aid the dating of ceramics from settlement sites because there are generally qualitative differences between the ceramics deposited in tombs and those discarded at settlements. A comparison of the ceramics from the tomb group found at Poggio Volpaio and the kinds of pottery found at settlement sites presented in Chapter 6 makes the difference clear: survey pottery is poorly preserved.

So the potential of the collection from the survey for chronological studies is limited. However, the ceramics collected from systematic survey come from a broad geographical area and a wide chronological span, unlike those from a single excavation. This situation allows a consideration of aspects of the production, distribution and exchange of ceramics. This chapter focuses on the evidence of the distribution of ceramic types and draws conclusions about patterns of exchange in the survey area.

When exploring the Etruscan economy one must tread carefully. The Etruscan period is not the Roman period and Etruria is not a part of Greece. We have even less support than Finley found in Hume's observation:

> 'I do not remember a passage in any ancient author, where the growth of a city is ascribed to the establishment of a manufacture. The commerce, which is said to flourish, is chiefly the exchange of those commodities, for which different soils and climates were suited'. (quoted in Finley 1979 ,22)

Thus ancient literature is not suited the reconstruction of Etruscan economy since so little of it relates to the Etruscan world, and none of it to what we might term an archaeological economy. What little there is (Ampolo 1987; Moscati 1987) has been discussed in chapter 5 above.

Much more tantalising is the recent discovery of a lead plaque at Pech-Maho in Languedoc. It is small enough to fit in a hand and dates to the fifth century. It has on one side on inscription in Greek concerning the purchase of a cargo in Ampurias and on the other side an inscription in Etruscan mentioning possibly a date, a personal name and the city of Massilia (Parlavecchia 1992, 169-3, 258; Cristofani 1991). The inscription is mutilated and poorly understood but it would seem to constitute some kind of commercial contract or delivery note.

It is not surprising that this unique text should be found in southern France, as artefactual evidence provides indications of close links between Provence and Etruria through the sixth and fifth centuries. Large quantities of Etruscan amphorae and bucchero have been found in the Iron Age *oppida* and other settlements along the coasts of Languedoc (Py and Py 1974; Bouloumié 1992). Such material is found in small quantities in coastal areas around much of the western basin of the Mediterranean, particularly in Spain, Sicily and Sardinia and Campania (Gras 1987; Almagro-Gorbea 1992; Camporeale 1992, 64-5), and may be differentiated from the more widespread thin distribution of Etruscan bronze items through most of continental western Europe (Parlavecchia 1992, 158-99). Etruscan shipwrecks also provide indications of maritime commerce in the Tyrhennian. Most have been found off the coast of Provence and typically contained a mixed cargo of largely Etruscan amphorae and bucchero with occasional Etruscan or Greek fineware and few Greek amphorae of various origins (Bouloumié 1992). The trade seems to have been carried out by extremely small craft, the wreck of Bon Porté I was only six to seven metres long and contained some twenty Etruscan amphorae. The Cap d'Antibes wreck was larger but still only contained 80 Etruscan amphorae along with three Greek amphorae and sixty five bucchero jugs or chalices (Bouloumié 1992). Closer to the Albegna valley off the north west shores of the island of Giglio another small wreck dating to *c.* 600 has been explored (Bound 1991). This too carried a mixed cargo in which Etruscan amphorae containing olives, pitch and perhaps wine predominated. Amphorae of various sorts originating from Etruria, Greece or Punic areas are regularly recovered from the seas around the Albegna and Ager Cosanus indicating that trade routes ran along the coast (Celuzza and Rendini 1991, 24-31).

Imported Greek pots

One discovery still to be made is a wreck of one of the ships which must have imported fine painted pottery from Corinth or Attica to Etruria. The quantity of Greek vases found in Etruria indicates regular trading contact between Etruria and Greece and the vast number of examples of Greek wares from Etruria are such as to encourage the reconstruction of a quantitative history of their import to various parts of Etruria (Martelli 1979; Rendeli 1989). This type of study documents details of contacts between the different parts of Etruria and different parts of Greece at different times. But caution is required before extrapolating studies of the Greek vases to the broader Etruscan economy, for almost without exception the vases themselves were grave goods and there is even evidence to suggest that Greek craftsmen produced wares specifically destined for Etruscan graves (Spivey 1991, 138-42) raising the possibility that, for Greek potters, Etruria was what is now called a niche market, a small market sector with high profit margins and a dependence on a particular product. The study of Greek pots cannot yet be closely integrated with a overall view of the Etruscan economy because of the present imbalance between studies of funerary contexts and settlement contexts and a rounded view is only slowly emerging (Cristofani 1985b). Furthermore, the extent to which Greek vases were confined to tombs has not yet been fully explored. They appear to be extremely common in tombs of necropolises of the large Etruscan cities, and the social and political conditioning of the find spots of imports into Etruria has recently been highlighted (Spivey and Stoddart 1990, 80-91). Another class of site where imported pottery seems to be common is the coastal *emporia* for example at Gravisca and Pyrgi (Cristofani 1985b).

One of the clearest observations which can be made in the survey evidence is that imported Greek figured fine wares are almost absent. This is in stark contrast to the presentation of Etruscan ceramic collections in the galleries of the world's

museums where Corinthian, Attic red figured and black figured wares are usually prominently displayed. The survey work in the Albegna valley clearly demonstrates that Greek imported wares are not commonly found by field survey in the Etruscan countryside. None were found in rural surface scatters and none were found in the excavation of the farm site at Podere Tartuchino (Attolini and Perkins 1992). One abraded sherd from Doganella was tentatively identified as red figure (Perkins and Walker 1990, fig. 26.25) and a sherd of black gloss ware from Doganella has been published as Attic (Michelucci 1984, 383); limited excavation and publication at Doganella have not recovered figured Greek wares (Michelucci 1984; Michelucci 1985b). Greek vases have been found in the valley but only in tombs, for example in the necropolises of Magliano and Saturnia (Minto 1925; 1935). The necropolises of Doganella have not been explored so it is not possible to demonstrate that Greek pots were used in the city cemeteries as they were so spectacularly at nearby Vulci. This absence of Greek painted wares in the countryside seems to hold for survey work in south Etruria too, since they are not mentioned as a site find in the South Etruria Survey (Potter 1979, 71-2), but then the Etruscan finds from the survey have never been fully published. How far this pattern may be generalised to other parts of Etruria will only become clear as more survey work is published. It would seem that at least in the Albegna Valley/Ager Cosanus the rural 'poor Etruscans' did not use Greek pots as fancy table ware (*contra* Vickers 1985/6).

Can this perceived absence of imported fine wares in the countryside be taken at face value? At least in the Albegna Valley/Ager Cosanus survey the scale of the fieldwork and the quantity of finds, along with the fact that the plough does not discriminate between classes of pottery, suggest that there is no systematic bias against the collection of painted wares. We may be satisfied that imported Greek wares were not incorporated into the archaeological record along with other debris and the remains of buildings. But this does not necessarily imply that Greek vases were not used in the countryside, for it is possible that Greek vessels were *used* but were not *discarded* at rural settlements along with the other pottery which the survey did find. At present, the distribution of imported Greek wares in the survey area suggests that they were mainly deposited in tombs and only rarely discarded at settlements. This pattern of distribution can also be seen in other fine wares, for example Etrusco-Corinthian or thin-walled Bucchero, both of which are almost absent from the survey finds but have been found in tombs in the necropolises of the valley. There is no direct evidence to explain why the imported fine wares are preferentially found in tombs but possible explanations fall into the following categories.

- Functional explanations: the vessels are largely those associated with banqueting, that is drinking or serving vessels, along with perfume or unguent containers. Banqueting and burial rituals are closely entwined throughout the Etruscan period, and therefore the banqueting vessels are those found in graves.
- Value explanations: the imported vessels were considered as intrinsically valuable due to their exotic origin, beauty and rarity. Therefore the imported vessels are found in tombs because they were valuable and wealth, if it is indicated by precious metals, fine workmanship etc., is often emphasised in Etruscan grave goods.
- Site formation factors: fine wares were well cared for during their 'life' and even repaired if broken. They were rarely discarded with other refuse and only finally disposed of in tombs.
- Post-depositional factors: grave goods are often found intact because they have been protected by the tombs in which they were deposited whereas rural settlements have usually been subject to agricultural activity and erosion, reducing the pottery to small fragments. Therefore the differential preservation seen in the distribution patterns is due to post-depositional factors.
- Cultural factors: the Greek nature of the pottery and/or its iconographical content made it particularly suitable for use as grave goods in a culture where Greek and Orientalizing influences were strong.

This list is not exhaustive but it serves to illustrate the complexity of the problem and the possible range of explanations for the observed patterning in the data. The more general issue of the importation and use of Greek pottery in Etruria has been considered by Nigel Spivey (1991) and some of the themes listed above are discussed in detail with examples. The evidence from the survey allows the issue to be viewed from the angle of the rural population. This indicates that the imported pottery did not end up on rural middens in large quantities. Figured ware has been found at some sites, for example Forcello (Paribeni 1986), Arteminio (Capecci 1987, 78-81), and Poggio Civitate, Murlo (Phillips 1989), but it is unwise to generalise because so few small rural Etruscan sites have been excavated and published in detail, and none of the three sites listed were small rural farms. It could be argued that fine vases did not reach rural sites, but the evidence does not support this: Greek pots have been found in the Albegna valley at Saturnia (Minto 1925), far from the sea, and the distribution of other types of ceramics demonstrates that there was a well-developed network of exchange between the city and the countryside which could have taken imported wares into remote areas. The evidence we do have suggests that the fine imports ended up in tombs. This in turn implies that ritual behaviour in conjunction with the factors mentioned above determined the deposition patterns of the imported fine wares in the survey area rather than strictly economic supply.

The Etruscan amphorae made at Doganella

The economy of the city at Doganella has been discussed at length (Perkins and Walker 1990, 70-75) and provides the first indications of the workings of the economy of an Etruscan city. Evidence was found of artisan activity, metalworking and weaving in a domestic context throughout the city. This contrasts with the evidence for the centralised organisation of the amphora production industry. The concentration of metalworking on the city suggests that the

rural community is most likely to have obtained metal products from the city. It would appear that only in the city was there a need to practice metalwork and the rural population would have depended upon urban smiths for their needs. A further indicator of the organisation of the household economy is provided by the ubiquity of *pithoi* at the settlement, suggesting that each household had a large and independent capacity for storage, presumably of foodstuffs, (or liquids) and probably also engaged in some farming around the city.

The most visible evidence for the production of ceramics in the survey data is the large quantity of amphorae wasters found at Doganella: this is unequivocal evidence for the production of amphorae in the city. This is the first site in Etruria to produce certain evidence for the production of Etruscan amphorae (Perkins and Walker 1990). Evidence of fine wares on the Provence shipwrecks indicates that that most of the amphorae found in Languedoc were produced in the vicinity of Vulci or Cerveteri (Bouloumié 1992), so Doganella should perhaps be considered as extending that range to the north. Of the large number of Etruscan amphorae found outside Etruria none of the published descriptions closely match the Doganella amphorae, particularly in the use of slips and the fabric colours. Therefore, it is sadly not possible to associate the known distribution of the amphorae in the western Mediterranean with the Doganella production. However, until further research is completed it is not certain that the complete distribution of the Doganella amphorae is known. None of the Amphorae published or displayed in the Villa Giulia exhibition (Rizzo 1990) were from Doganella and the amphorae from the Giglio wreck have not been examined, or published in detail. At present the only probable example from outside of the Albegna Valley comes from the Montecatino in the Val Freddana in the province of Lucca[31] (Ciampoltrini *et al.* 1989-90, Fig. 1b, n.8). This is perhaps an unlikely location, slightly inland and on the fringes of Etruria but it is an intriguing first extension to the distribution pattern. Therefore, it is not yet possible to suggest that the amphorae from Doganella were exported to Languedoc, Provence and the shores of Spain and Sicily in the same way as other Etruscan amphorae. Future research may hold many surprises and help to identify the trading contacts of the city at Doganella outside of the Albegna Valley.

The systematic collection of surface materials has enabled the study of the distribution of these amphorae throughout the whole survey area. The map of the distribution of the amphorae illustrates that they were mostly found in the areas closest to Doganella in the Lower Albegna Valley. Very few amphorae from Doganella were found in either the upper valley or the eastern Ager Cosanus.

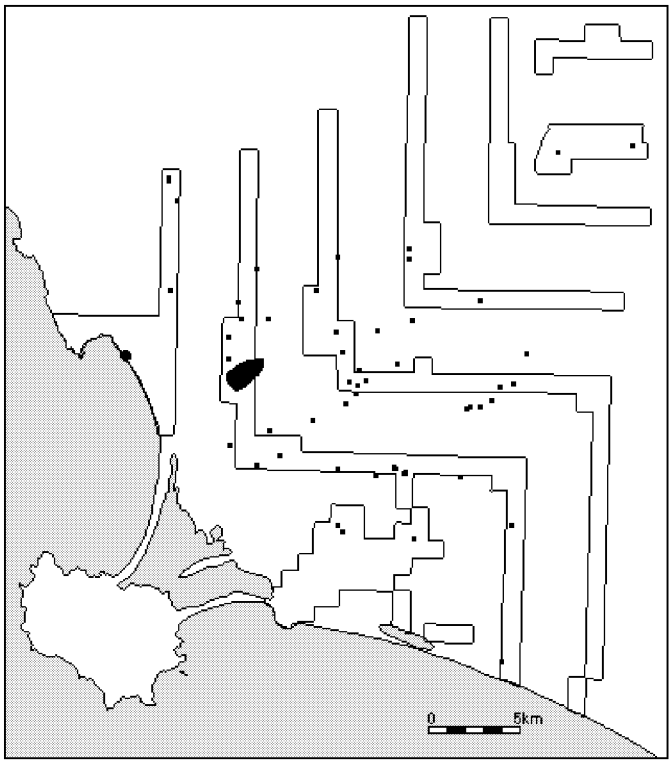


Fig.8.1 Distribution of amphorae made at Doganella.

The distribution may also be presented as a graph of the percentage of find spots at increasing distances from the city. The graph, below, also presents a curve representing the distribution of distances of settlement sites from the city at Doganella in the 5th century. The two curves are different. The curve for the settlements is a more or less straight line indicating that the settlements are not clustered around the city. The curve for the amphorae confirms the impression provided by the map showing that some 50% of the amphorae were found within 7km from the city and 90% within 14km. This relationship indicates that the amphorae were certainly used in the countryside as well as the city and that most were used (and deposited) close to the city.

[31]Ciampoltrini only says the sherd is similar to those from Fonteblanda and Orbetello, but he is Inspettore of parts of the Albegna valley and is familiar with the material from Doganella, thus we may be reasonably sure it is an amphora from Doganella.

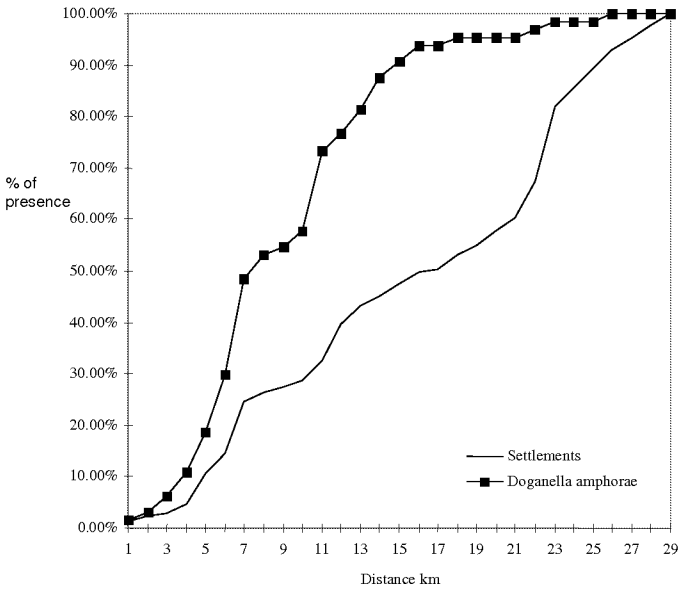


Fig.8.2 Graph of the distribution of Doganella amphorae and settlements against distance from the city

The *raison d'être* of the amphorae – transporting loose goods – suggests that some agricultural produce was destined for trade. Evidence for the manufacture of amphorae within the city suggests a centralised control of the production of the amphorae themselves, and this in turn suggests that the city was most likely to be responsible for organising the mobilisation of the agricultural produce which the amphorae represent. The finds from Doganella, and the surrounding countryside, provide evidence for the spatial extent of this organisation of production; this measure suggests that the territory producing for the city was mostly within a radius of 15km. If one considers that the fields and vineyards of the lower valley must have produced the grapes for the wine or the olives which filled these amphorae, the fact that the amphorae were produced in the city suggests one of three possibilities:

- either the crops were processed in the countryside and bottled in the city, or
- the raw produce was transported to the city where the wine was made or the olives prepared and then bottled, or
- the wine was made in the country and amphorae were transported from the city to be filled at the farms (this topic is further investigated in Perkins and Walker 1990, 71-5).

We have no further information about how the agricultural surplus was mobilised. It may have been a tax or tribute funnelled into the city, or a cash or bartered crop or even a form of rent as in share cropping. We just do not know enough about Etruscan land tenure and economics to be able to advance an explanation. However there is something of a paradox in the distribution of the amphorae. If the amphorae were used to transport surplus produce to market or to the consumer, how is it that the amphorae have been found in the countryside which is where the surplus was *produced*? In a neat theoretical model for the mobilisation of surplus produce through the city, amphorae would not be found in the area where their contents were produced, but only where the contents were consumed and the amphorae discarded. Clearly, the reality was more complex and the amphorae, and/or their contents were used for storage or transport in the productive countryside as well as the city and possibly outside of the region.

Needless to say the amphorae are only the visible products of the city, to these must be added other organic produce, such as grain or livestock which are archaeologically invisible.

In relation to the products of the city, imports seem meagre. The only visible luxuries are a hand full of sherds of eastern Mediterranean origin from different sources, from Athens (Amphora fabric 8), the Levant (Perkins and Walker 1990, 45) and Corinth (Perkins and Walker 1990, 45), and possibly from the Aegean (Amphora fabric 10, 13, 14), Ionia (Amphora fabric 11) and Mende (Perkins and Walker 1990, 45), and other Etruscan amphorae (Perkins and Walker 1990, 45-6). Other imported durable luxuries were not noted; one suspects that if the inhabitants of Doganella imported Attic pottery they deposited it in their tombs rather than upon their refuse heaps! Nevertheless this meagre haul does indicate trading contacts with a wide variety of regions around the Aegean and also further east in the Mediterranean.

Coarsewares

Study of the amphorae allows the reconstruction of a trade in agricultural produce but the evidence of the pottery distributions has revealed further currents of more humble trade within the valley. The clearest evidence for this comes from the study of the coarseware made in Doganella in the same fabric as the amphorae (Coarseware 2). The spatial distribution of the pottery and the graph of its range is very similar to that of the amphorae and can be taken as a further illustration of the geographical extent of the economic influence of the city.

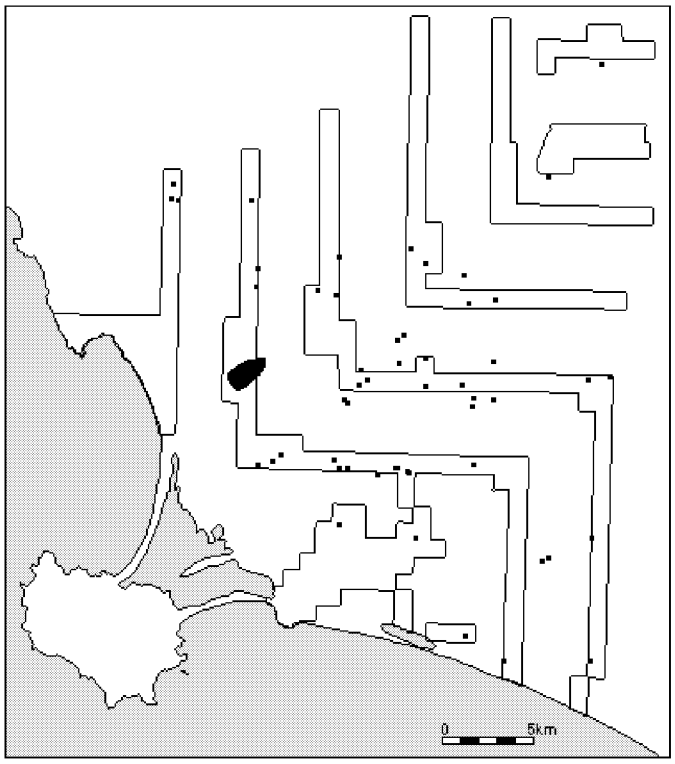


Fig.8.3 Distribution of coarseware 2, made at Doganella.

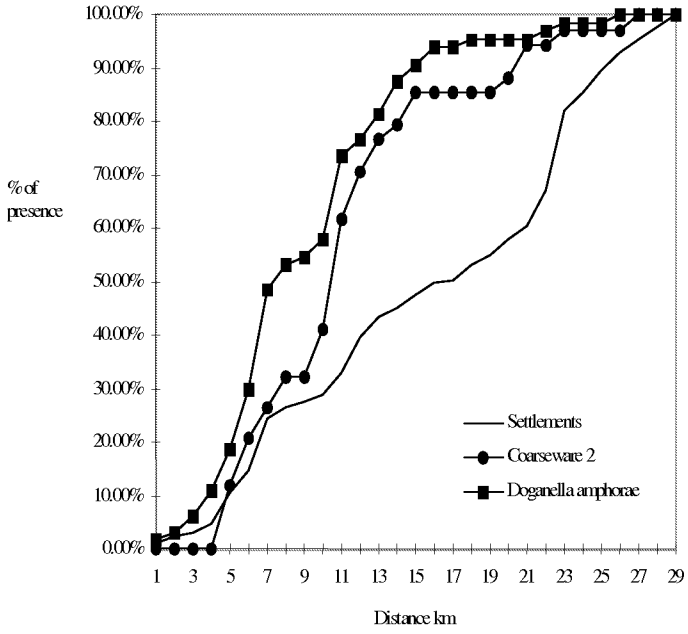


Fig.8.4 Graph of the distribution of Coarseware 2, Doganella amphorae and settlements against distance from the city.

The similarity of the two Coarseware 2 and the amphora distribution patterns suggests that these items were being distributed through similar mechanisms of transport and exchange since they were produced at the same location and distributed to the same places. The simplest explanation is that Doganella was a market centre for the amphorae and the Coarseware 2 pots. Presumably, the fact that over 80% of the Coarseware 2 was found within 15km of the city indicates that most people using Doganella as a market centre to acquire ceramics came from within that area. Although the final distributions of the amphorae and the coarsewares are similar this does not necessarily imply that there was a unified trade in ceramics made in the city at Doganella, since it is probable that the amphorae were traded for their contents rather than the vessel alone. Therefore it is possible that the two similar patterns are a result of trade in separate commodities pottery and agricultural produce – probably wine.

Other coarsewares do not display this same pattern of distribution. A comparison between the distribution of the Doganella-made Coarseware 2 and the ubiquitous dark red sandy Coarseware 1 shows a different spatial distribution with reference to the city.

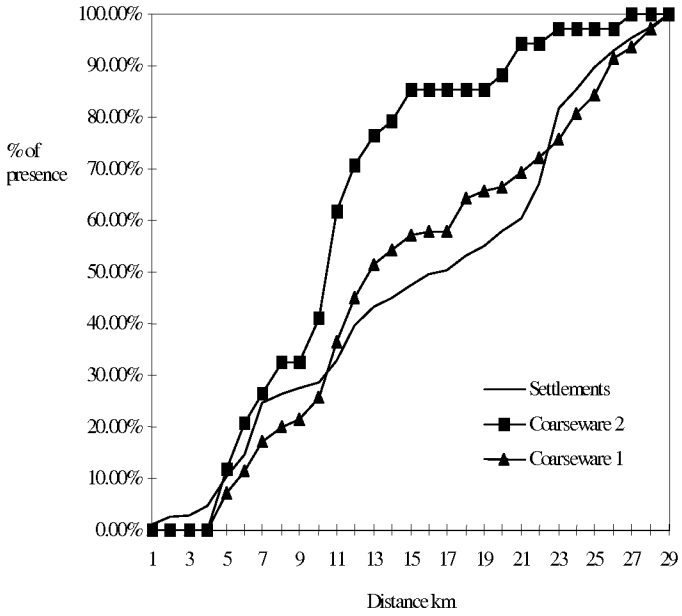


Fig. 8.5 Graph of the distribution of Coarseware 1, Coarseware 2 and settlements against distance from the city.

The Coarseware 1 is not clustered around the city in the same way as the Coarseware 2. The Coarseware 1 is distributed throughout the valley and the curve of the distribution of the pottery plotted against distance from the city is similar to the general curve of the distances of all settlements from the city. This suggests that Coarseware 1 was not exclusively made at the city but that it was either produced at a number of scattered sites like, the rural kilns detected by the survey, or produced at fewer sites but distributed widely via the city, minor centres and perhaps also villages. This suggestion is supported by the fact that

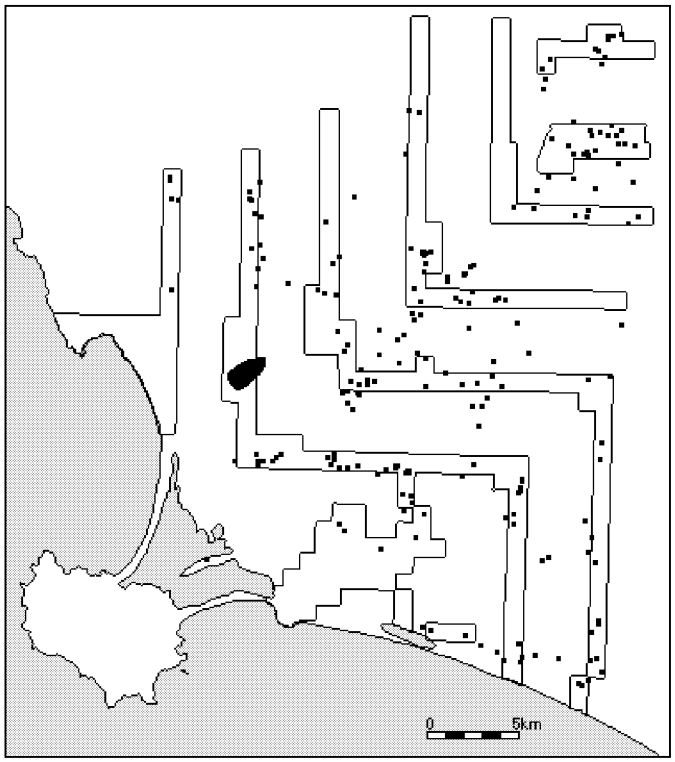


Fig. 8.6 Distribution of coarseware 1

there is little standardisation in the ware and it was probably fired in clamp kilns.

Consideration of the distributions of the Coarse Creamware 1 and the Coarse Creamware 2 provides evidence of further patterning. The Coarse Creamware 1 is not a local product. It contains minerals of volcanic origin, suggesting a source for the minerals in southern Etruria somewhere between Veii and Vulci. Doganella was not alone in receiving Coarse Creamware 1; it has been found along the coastline of Etruria, in the Arno valley and as far North as Genova (Capecci 1987, 130-31; Milanese and Mannoni 1986). The fact that large quantities of basins in this fabric have been found at Doganella is not then surprising, and it demonstrates that the city fully participated in Tyrhennian trade, a point reinforced by the finding of a Caeretan cylinder impressed *pithos* (Perkins and Walker 1990, 33). The Coarse Creamware 1 is less common further from the coastal areas but the distribution pattern does not match the pattern for the pots made at Doganella. This suggests that there were networks of distribution for the pottery which reached all parts of the survey area and were not necessarily tied to the city at Doganella.

The distribution of the Coarse Creamware 2 is different again. The fabric is not found at Doganella, but it is distributed throughout the coastal plain of the Ager Cosanus. Some, but probably not all, of this ware was made at the village kilns of CAP46 in the Radicata valley. This pottery then provides yet another model for the production and distribution of ceramics in the valley with village production and local distribution apparently by-passing the city. Some of the less common ceramic fabrics (for example Coarseware 6 and Coarseware 12) may also fit into this small scale model of production as they were only recorded from a few sites in a limited area.

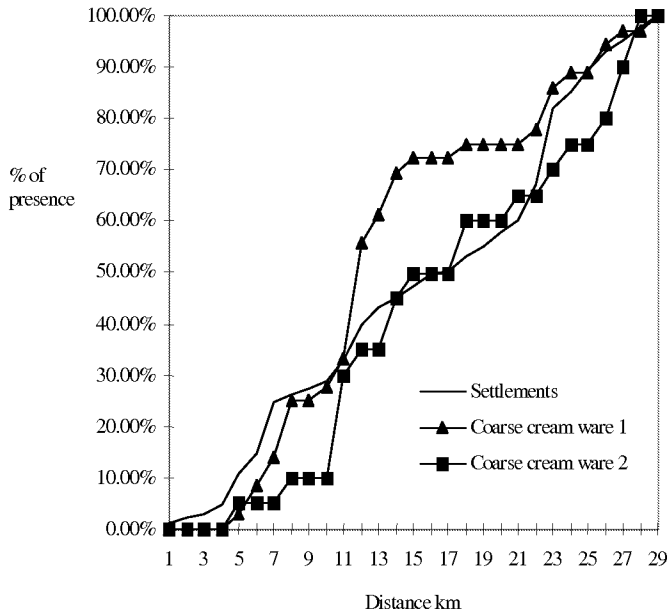


Fig.8.7 Graph of the distribution of coarse creamware 1, Coarse creamware 2 and settlements against distance from the city.

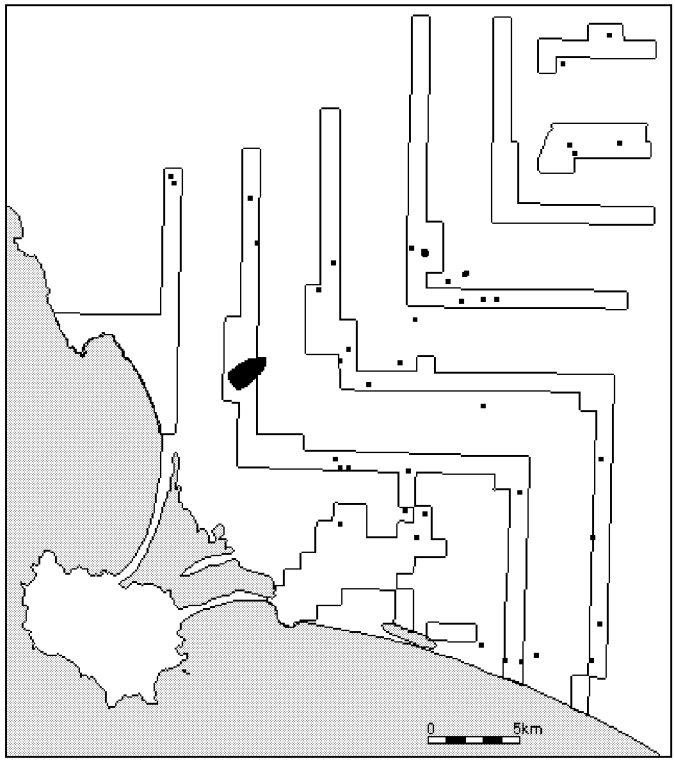


Fig.8.8 Distribution of coarse creamware 1.

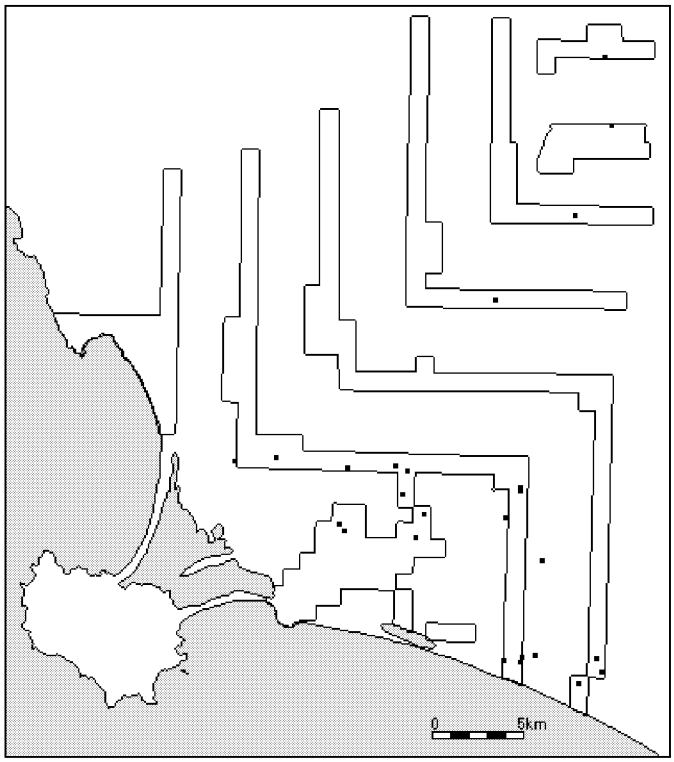


Fig.8.9 Distribution of coarse creamware 2.

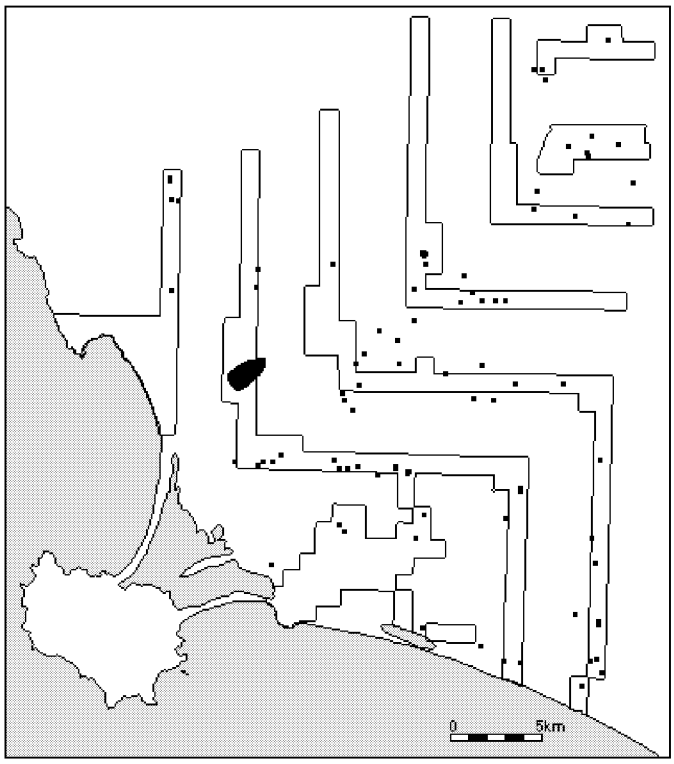


Fig.8.10 Distribution of fine creamware.

The fine creamware displays a different pattern again. Above, it was suggested that this might have been produced at Doganella, but the distribution pattern does not confirm this. The ware is found throughout the valley and is found around all of the centres and in the coastal strip of the Ager Cosanus.

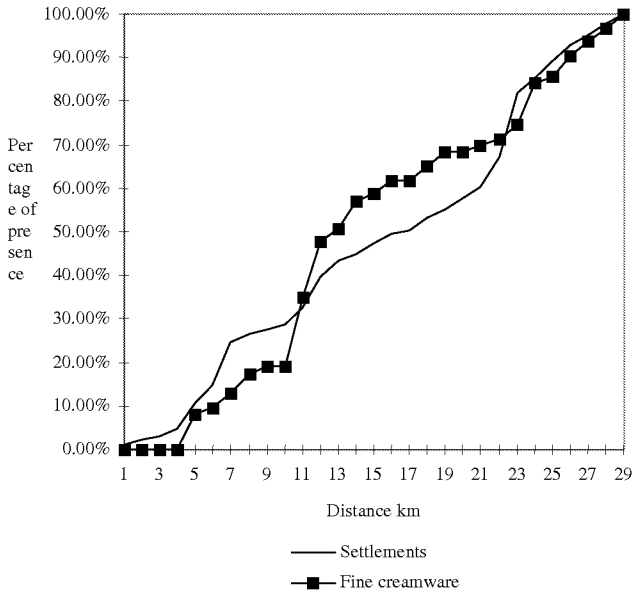


Fig.8.11 Graph of the distribution of Fine Creamware and settlements against distance from the city.

Without evidence for a production centre it is hazardous to hypothesise a distribution mechanism, but there may have been several production centres for this ware or a widespread demand may have created a wide distribution pattern.

Some of the forms, for example the stemmed plates and chalices, are highly standardised both in shape and size and it is possible that they are the products of single specialised workshops. Certainly this impression of regularised production contrasts with the variety of forms, firings, and fabrics seen in the coarsewares.

Pithoi

What is surprising, and an absolute novelty in Etruscology, is that there was also a commerce in everyday *pithoi*. A further set of distribution patterns can be seen in the find spots of the *pithoi*. Those made in the same fabric as Coarseware 1, 2 and Coarse Creamware 1 are distributed evenly throughout the valley.

The distributions do not seem to be clustered around any particular point which might indicate a centre of production. Once again there was no direct evidence in the form of wasters or kiln remains to indicate a centre of production. However, sherds of *pithos* in Coarse Creamware 1 contained large numbers of inclusions of volcanic minerals. These inclusions, black augite and golden mica, are common in most of the Latial volcanic sequence, including Lago di Bolsena. There are three likely explanations for this phenomenon, either:

- there was a trade in the mineral inclusions, that is black augite itself was considered worth exchanging; or
- that the finished *pithoi* were transported over long distances; or
- that itinerant artisans travelled with some of their raw materials.

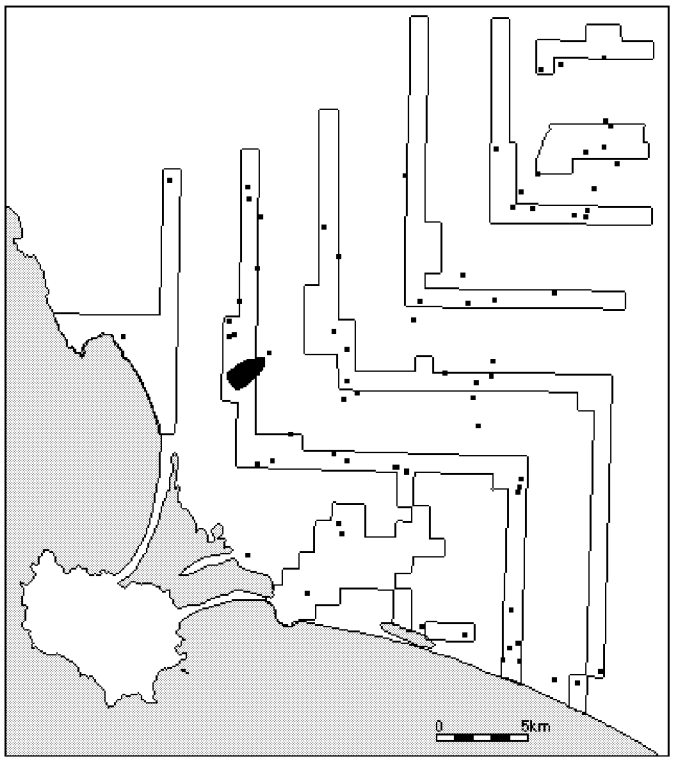


Fig.8.12 Distribution of *pithoi* in coarseware 1.

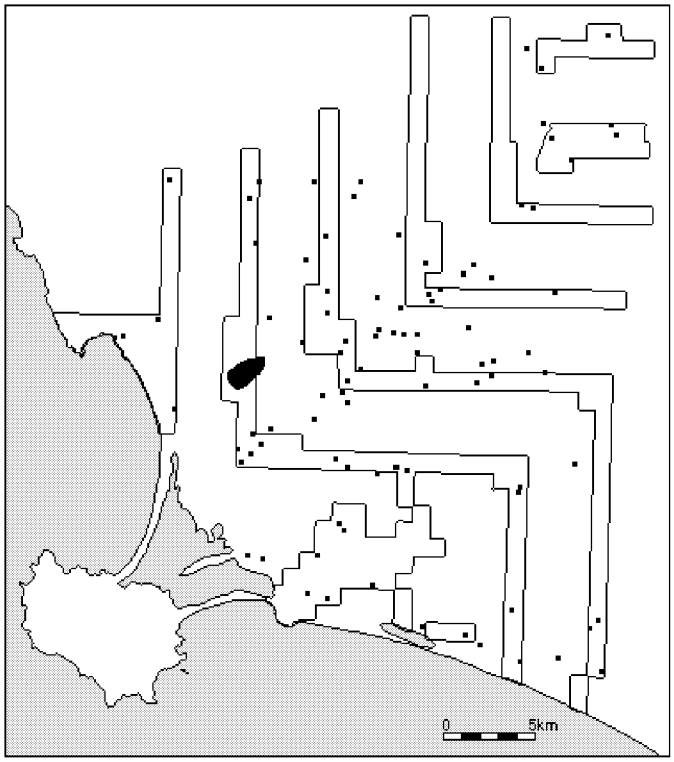


Fig.8.13 Distribution of *pithoi* in Pithos fabric 2.

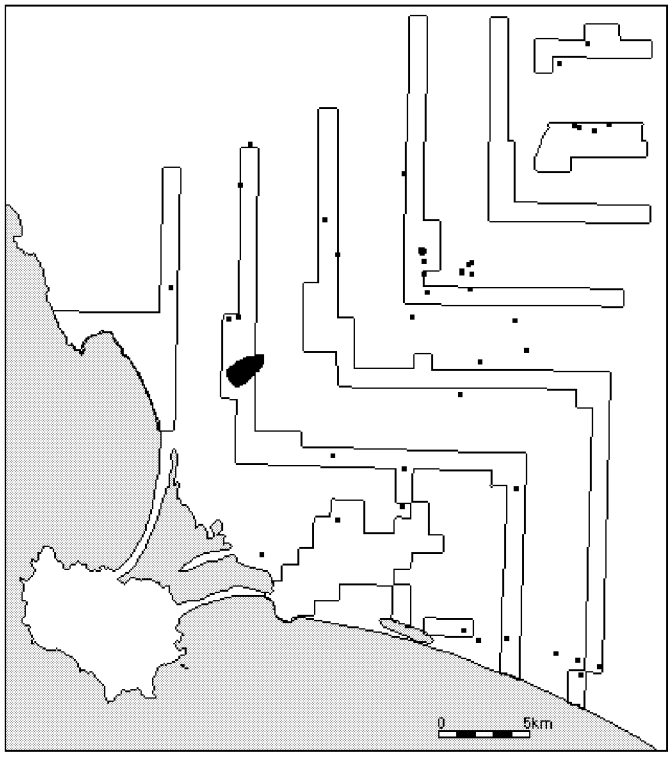


Fig.8.14 Distribution of *pithoi* in coarse creamware 1.

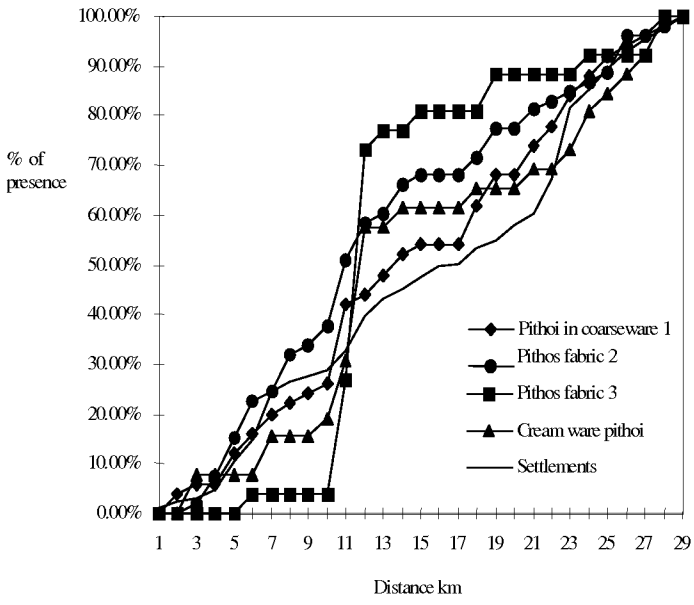


Fig.8.15 Graph of distibution of *pithoi*

This observation provides evidence for the surprising, and novel, conclusion that either grits for making *pithoi* or everyday *pithoi* themselves were trundled around the Ager Cosanus and Albegna Valley on the back of carts. If this was the case it implies that the economy of southern and central Etruria was far more integrated than hitherto suspected. Alternatively a class of itinerant artisans producing mundane, but essential, articles such as these large storage jars is an equally unprecedented hypothesis. A similar phenomenon to this has been recorded in architectural terracottas excavated at Satricum in Latium where petrological work has established that the mineral inclusions in the terracottas originated in South Etruria, indicating transport of either raw materials or products (Kars *et al.* 1987). The same observations have also been made at the Regia in Rome (Downey 1995). This conclusion is supported by studies of die-linking in fictile heads found at Falerii and Veii, or the Veii-Roma-Velletri group of architectural terracottas where pieces from the same mould have been found at different sites. In this case both transport of finished pieces and itinerant craftsmen have been suggested as possible explanations (Comella 1985, 89-90, with footnotes). It is easy enough to conceive of a group of artists or craftsmen moving from one temple construction site to the next with their equipment, but itinerant *pithos* makers are more difficult to imagine. Nevertheless making and firing *pithoi* could well have been a specialist activity because in the late Republican period at least they were proverbially difficult to make (White 1975, 145 quoting Zenobius *Prov*. 3.65).

The evidence of the distribution patterns of the other *pithos* fabrics is equivocal: most are widely distributed throughout the survey area and do not seem to display any relationship to the city at Doganella. This is what might be expected from the proposed model of itinerant *pithos* makers where the distribution is related to site locations rather than the location of the market or production centres.

An exception to this pattern is pithos fabric 3 which has a peak in its distribution at 10-12km from Doganella around the minor centre at Ghiaccioforte. The same ware was found at Doganella where it was rarely used for basins and *pithoi*, but it was principally recorded as a tile fabric (Perkins and Walker 1990, 41, 48-9, Coarseware 5, tile fabric 2). This situation is not readily explicable: it may indicate redistribution of *pithoi* through Ghiaccioforte or production at Ghiaccioforte, but it could also be due to a casual similarity of fabric between the tiles and the *pithoi*.

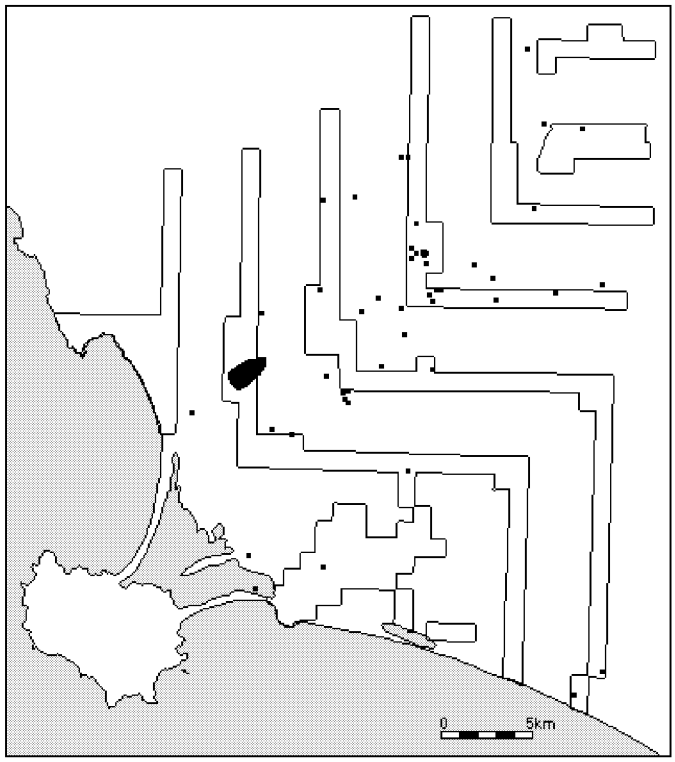


Fig.8.16 Distribution of *pithoi* in Pithos fabric 3.

The other *pithoi*, made in Coarseware 1 and *pithos* fabrics 2 and 3, and containing local minerals and widely distributed, could have been produced at a large number of sites, or well marketed or produced by travelling craftsmen. On the available evidence it is not possible to favour one explanation above another but in any case the observation of imported minerals indicates an unexpected complexity in the production and distribution of the *pithoi*.

A final observation which can be made, but does not provide a solution, is that the Etruscan traditions of *pithos* manufacture seem to have survived the Roman conquest of the Albegna Valley and Ager Cosanus because Etruscan type *pithoi* were found at a large number of sites which otherwise contained only Roman material (72 sites, 138 sherds). This suggests either a continuity of production or the possibility that Etruscan *pithoi* were re-used on new Roman settlements after the conquest.

Mechanisms of exchange and production

Generally, it must be assumed that exchange within the city and between the city and its territory was on the basis of barter. However, some of the fragments of bronze from the city, and Podere Tartuchino might be interpretable as *aes rude*, suggesting some level of monetisation. The evidence of the distribution of the ceramics made at Doganella suggests that the city acted as a market centre, and it is probable that the minor centres also functioned as markets. Bartering of commodities was not necessarily the only form of exchange since and social obligations, rent or tribute may also have been fulfilled by exchanging produce and goods.

At Doganella there are no visible imports sufficient to compensate the export of the wine amphorae. Admittedly the

necropolises, the traditional repositories of Etruscan wealth, have not been excavated at Doganella and the hills around the city may well conceal many tombs, particularly as the necropolises of nearby Talamonaccio and Orbetello have yielded high quality metalwork and jewellery of the Hellenistic period. Perhaps the only significant indicator of wealth at Doganella is the sheer size of the enclosed city.

The evidence from the farm at Podere Tartuchino has been discussed in detail and indicates a farm producing a surplus. There is evidence for some exchange in ceramics, iron nails and soapstone beads. There is also the possibility bronze ingots (*aes rude*) were used for the accumulation of wealth and pre-monetary exchange transactions.

The distributions of ceramics, both local and imported suggest that the rural farm sites engaged in exchange to obtain at least some of the ceramics they used. What then were these sites producing to exchange for pots and pans? The large number of rural sites scattered through the survey indicate that the agricultural system exploited most of the readily cultivable areas. Although the site excavated at Podere Tartuchino was typical of the surface scatters discovered by the survey, its location in the high valley is at the upper extreme of the area settled in the Etruscan period. This suggests that the mixed cultivation of grain, olives and vines, along with animal husbandry was practised throughout the valley, not just in the favourable lower areas on the river terraces but also higher in the hills. Within the permanently settled areas is not possible to divide the land in to higher areas devoted to pastoral economy and lower areas which were arable. However, the higher hilly areas in the northern part of the valley and towards the headwaters of the Albegna, where no evidence for permanent settlement was found, may have served as seasonal pasture for farmers settled in lower areas. However, upland areas which have been carefully explored have not yielded significant evidence for pre-Roman settlement, even if they were exploited (Barker and Grant 1991).

Generally the evidence from the valley suggests a widespread system of mixed agriculture. Evidence of the distribution of *pithoi* throughout the survey suggests a high level of production and storage in the countryside and the distribution of the *pithoi* may serve as a proxy for the distribution of this system of agriculture. This evidence and the excavation evidence from Podere Tartuchino suggest that the rural sites were exchanging agricultural surpluses to obtain ceramics

The amphorae from Doganella and elsewhere serve as proxies for trade in agricultural produce. It must be assumed that there was also trade in other produce, materials, textiles, foodstuffs and resources which are either not so apparent, or invisible, in the archaeological record as recovered by survey and limited excavation.

The evidence for rural craft activity or ceramic manufacture is rather meagre. There is no evidence for metalworking outside of the urban centres. Spinning and weaving are attested by finds of whorls and loom weights. The best evidence for ceramic manufacture comes from the city at

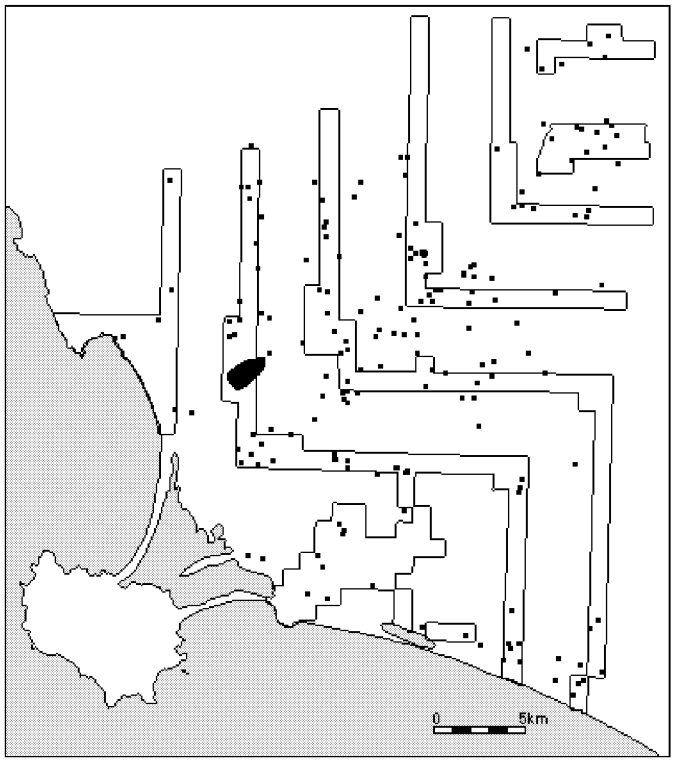


Fig. 8.17 Distribution of all pithoi in the survey area.

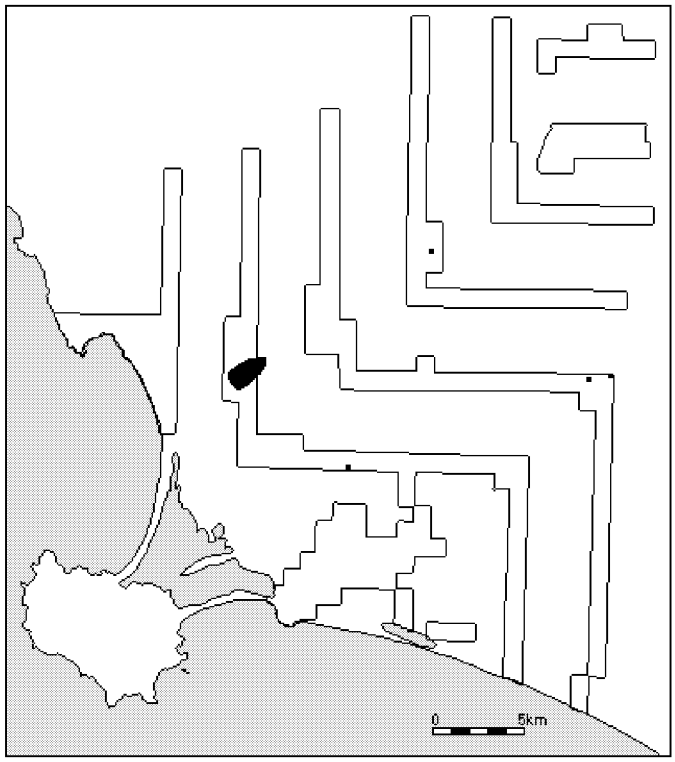


Fig. 8.18 Distribution of ceramic wasters in the survey area.

Doganella itself and the suburban sites of SD216 and 250 (Perkins and Walker 1990, 38, 43, 94). The other rural sites are small with the exception of the village at CAP46 which seems to have produced coarseware. This would seem to suggest that much of the pottery production took place in an urban context, but that there was also some rural production.

This evidence of kilns and wasters should be treated cautiously because to judge from the firing of the pottery the kilns used to produce the pottery would not have had to be substantial, simple bonfires or clamp kilns would have been sufficient and these leave little archaeological trace (Swan 1984, 53-4).

Conclusions

Overall the evidence for exchange and distribution in the survey area cannot be used to reconstruct a all embracing model of the functioning of the Etruscan economy. However, the evidence does provide a complex picture of a set of local, regional and inter-regional economic relationships. Local patterns of exchange are visible in the distributions of household pottery. Within this local exchange different patterns are visible some domestic pottery seems to be distributed from rural production sites (coarseware 1, coarse creamware 2) whereas other types of pottery are distributed through the urban centre at Doganella (coarseware 2, Doganella amphorae). Another production, fine creamware, has a distribution pattern which does not seem to be based upon the location of Doganella and the minor centres may have had a role in the distribution of this ware which seems to have been produced at a single (unknown) centre. The fine ware may have been produced at Doganella but it was distributed throughout the region of the Albegna Valley and Ager Cosanus. A similar pattern is presented by the distribution of coarse creamware 1 which was found throughout the region in both rural and urban contexts. This ware certainly originated outside of the region, in southern Etruria, and so the pattern seen in the survey area is part of a wider distribution which extends along the Tyrhennian coast of Italy. The observed distribution in the valley is therefore the result of importation and redistribution within the valley. The pattern itself does not indicate whether the ware was exchanged in the city and minor centres or through rural networks of exchange: but it does indicate that the exchange was not monopolised by the city of Doganella since it is different from the distribution pattern of the urban products.

Pithoi were also distributed in different patterns throughout the region. There is little to suggest that the city at Doganella played a significant role, but the minor centre at Ghiaccioforte may have been a market centre and *pithoi*, or their raw materials, were imported into the region from southern Etruria.

9. Settlement, society and material culture.

The Albegna valley and Ager Cosanus is something of an in-between world. Nowadays it is split between the regions of Lazio and Tuscany, just as in the seventh century BC when the objects buried in tombs at Marsiliana may be related to both Vetulonia to the north and Vulci to the south. In the early Roman period it has been suggested that the river Albegna formed the frontier of the Ager Publicus of the Roman state at one stage (Carandini 1988, 225-34) and was the boundary between the Roman and Etruscan worlds. During the editing of Cambi *et al.* (1991) someone decided that the area was a part of northern Etruria so that all of the headers in the article read 'Northern Etruria', meanwhile in Carandini (1985) the area is firmly placed in the territory of Vulci. This ambiguity is not confined to the archaeological arena, naturalistic criteria also mark this area as a boundary. The geology changes from the volcanic to the sedimentary and relief and drainage follows suite. The more recent cultural history of the area is also separate from both the civilised Tuscany of Siena, Pisa and Florence and the culture and power of Rome.

Up until 1992 when the results of the field survey at Doganella were published (Perkins and Walker1990) the area was something of a backwater in Etruscology. The significance of the re-emergence of this massive city has yet to sink into the consciousness of Etruscologists. Maps of the cities of Etruria are still published with a yawning gap between Vulci and Roselle. The city may be atypical in that it has not produced hundreds of Greek vases, but along with Veii and Marzabotto it is the Etruscan city that we now know most about. The survey as a whole has advanced that status because, unlike most other Etruscan cities, it now has a context both in terms of a generalised settlement pattern of which it is a part, and the detailed study of a rural settlement through the excavation at Podere Tartuchino. The Albegna Valley and Ager Cosanus may or may not turn out to be typical of Etruria, but at the present moment it is the only part of Etruria, along with the areas surveyed by the South Etruria Survey, in which archaeological conclusions have a firmly rooted regional context. One hopes that this situation does not persist for much longer, work around Cerveteri is providing evidence of agricultural intensification and population increase similar to that found in this survey area (Enei 1992), and work at Tuscania is presenting a situation analogous to that around Saturnia (Rasmussen 1991) and further publications will enrich the archaeological history of Etruria.

The survey work has demonstrated that in the Etruscan period a highly organised settlement pattern and hierarchy developed. Small rural sites occupied the fertile lands suited to agriculture and minor urban centres were regularly spaced throughout the Albegna Valley. In areas distant from urban centres, such as the hills towards the north and east watershed of the valley and the Ager Cosanus, villages developed in place of minor centres. The lower valley was dominated by an extremely large urban centre. This structured pattern suggests that the city at Doganella had some form of political control over the Albegna valley. The re-discovery of the city and its associated settlement pattern allows the gap in the distribution of Etruscan cities between Roselle and Vulci to be filled by this new Etruscan city-state, centred upon the city at Doganella. To the south the boundary of this city-state with Vulci probably lay along the fortified chain of hills which form the watershed between the Albegna Valley and the coastal strip that became the Ager Cosanus. To the north, the boundary with Roselle probably followed the northern watershed of the Albegna valley. The extent of the territory controlled by the city at Doganella inland is less clearly defined. It is probable that Saturnia in the upper Albegna Valley was a part of the territory of Doganella, but in the upper reaches of the Fiora there is a cluster of minor settlements including Castro, Pitigilano, Sovana, Sorano, Poggio Buco, and possibly further south Tuscania too, indicating that a different settlement pattern may have existed in the inland areas. This high density of minor centres may indicate a different form of territorial control and may be contrasted with the coastal areas of Etruria dominated by large urban centres at Doganella, Vulci and Tarquinia. In these coastal areas the minor settlements at Talamonaccio and Orbetello may have functioned as ports and outlets for the agricultural produce of the Valley. The survey evidence for this activity is best from Talamonaccio where a relatively large number of imported transport amphorae were found. Similar functions of port and *emporion* have been suggested for the sites of Regisvilla, Gravisca and Pyrgi further south, close to large cities. Another function performed by the centres, at least in the lower valley, seems to have be religious because the only evidence for sanctuaries comes form Talamonaccio, Ghiaccioforte and possibly Doganella.

The highly structured settlement pattern developed rapidly. Few settlements can be dated to the ninth or eighth centuries and few tombs have been found. The relative invisibility of later Iron Age and Villanovan period settlement is not confined to this part of Etruria, rural settlements from this period are rare, and the best evidence comes from sites such as Veii, Tarquinia and Vulci which go on to be urban centres. This thin density of early settlement may be exaggerated by the fact that Villanovan period buildings were constructed with timber walls and without tiled roofs and so are not easily detected by field survey. Another consideration is that early settlements in the lower valley may now be obscured by sediments deposited during the Classical and Medieval periods. The rarity of settlements from the ninth or eighth centuries is matched by a scarcity of burials. Sporadic 'Villanovan' burials have been recorded but no large scale cemeteries have been found. Nevertheless burials in the Villanovan tradition have been found and the earliest burials in the cemetery at Marsiliana follow in this tradition with burials in urns with drinking vessels and personal belongings such as lunate razors. The few known burials show no indication of varied burial practice that might indicate social stratification.

In the early to mid seventh century this picture changes and the cemetery at Marsiliana provides strong evidence for a

stratified society with a range of social personae represented in the burials. The change from modest cremations to inhumation in single graves marked with a tumulus indicates an increased emphasis upon the individual and personal status. This development fits well with the pattern observed in other parts of Etruria which may be conveniently described as the 'Orientalizing period'. However in many parts of Etruria rich burials indicating the development of a stratified 'aristocratic' society seem to be closely related the formation of urban centres, particularly at Vetulonia, Vulci, Tarquinia and Cerveteri (Nicosia, 1992, Camporeale, 1992). In the Albegna Valley the society represented at Marsiliana cannot be directly related to the formation of the city at Doganella because the two sites are 5 km apart. Nevertheless, burial practices at Marsiliana change to communal depositions, less rich burials in chamber tombs, towards the end of the seventh century at the same time as the city is forming at Doganella. The 'aristocratic' social structure seen at Marsiliana is replaced by a different structure visible in the hierarchical settlement pattern and more 'egalitarian' chamber tombs. It may be that the social dominance seen in the 'aristocratic' burials is transferred to an urban context in the new city at Doganella.

Although the settlement pattern has been interpreted as a manifestation of political and social organisation the precise nature of the political and social control in the city and the country remains unknown. Without written sources we are at a disadvantage. Study of the distribution of ceramics has revealed that some aspects of the economy of the valley operated through the city at Doganella and this may indicate that political and social dominance also had an economic component. Although it has been suggested above that *clientela* formed the basis of the political and social relationships between city and country there is no detailed evidence for how it may have functioned.

One of the major contributions of this research has been the identification of an organised Etruscan agricultural system functioning within a settlement pattern throughout the region. The history of Etruscan agriculture has been schematised by Forni (1989), who differentiates between the introduction of vines, olives and fallow rotation – associated with the development of elites, and the widespread adoption of polyculture and consequent emergence of a structured landscape and trade in agricultural produce – associated with the development of the city. The first of these, Forni's phase III is dated to the period 750-600 and in this reconstruction polyculture becomes common in phase IV, *c.*600. This same transformation in agriculture is also linked with state formation in Etruria by Barker (1988) who sees a transition from generalised stock-keeping and mixed agriculture to Mediterranean polyculture with intensive stock-keeping somewhere in the ninth to eighth centuries. There is not yet a sufficient range of evidence to be able to plot the spread of farming with olives and vines, nor to pin down a precise chronology, but both Barker and Forni have pointed out that it seems to be broadly contemporary with the emergence of elites, state formation and urbanisation. Forni goes on to also associate it with the development of a trade in surplus production. What is now possible, following this field survey work, is to also associate these agricultural changes with the development of an articulated pattern of rural settlement and a massive increase in population.

All of these developments may be observed in the archaeology of the Albegna valley. In the Orientalizing period there is evidence for a social elite in the seventh century at Marsiliana and wine seems to have formed a part of the banqueting theme which is recurrent in their burials. Towards the end of the seventh century there is evidence for urbanisation with the development of the city at Doganella, and perhaps also some of the minor centres in the valley. The development of the city at Doganella and the growth of the rural settlement pattern clearly coincides with the first artefactual evidence for the production and exchange of surplus oil and wine in the later part of the seventh century (Pavolini 1982, 294-7; Cristofani 1987a). The Albegna valley is the first part of Etruria to yield definite evidence for the location of the production of transport amphorae which firmly places their production, and subsequent distribution in an urban context (Perkins and Walker 1990, 41-4). The mobilisation of the agricultural surplus that this production represents is the most visible economic activity in the city from perhaps the late seventh century to at least the middle of the fifth century.

If the settlement history of the Etruscan period is also taken into account it becomes apparent that the rapid and large scale settlement of the valley would not have been possible if the agricultural system, and particularly the surplus production, had been dependent on the production of olives and grapes. Neither are ideal crops for the pioneer settler. Grain and animals produce an annual return from the first year whereas arboriculture requires several years of investment and effort to provide a useful surplus. For the settlers of the valley there must have been an initial period when a new settlement was precarious in the late 7th and early 6th centuries.

An interesting perspective on this pioneering settlement is provided by an ethnographic study of agricultural adaptation on the Nigerian savannah and an historical study of Finnish settlement of the Delaware valley in the USA in the seventeenth century (Stone 1993). Stone identifies two classes of agricultural settlers in each of these regions. These he characterises as the extensifiers (or abandoners) and the intensifiers. The former are the first settlers who cut down the virgin forest and enjoy high marginal returns on their effort, exploiting the fertility of the newly cleared land. However, for these pioneers as the population grows, the natural resources degrade as a result of the disruption of the natural ecosystem. These settlers then have the choice of either intensifying their agricultural production or moving on to new frontier territories and abandoning the land to those intensifiers who are prepared to invest the effort in the land to establish an agricultural production which is viable in the long term (Stone 1993, 76-9). This distinction drawn by Stone might well be extended to characterise the forms of settlement adopted by each of the groups, the extensifiers

were semi-nomadic in the medium term and lived in ephemeral structures, whereas the intensifiers were sedentary in the long term and built permanent structures.

If this model is extended to central Italy and applied to the results of the excavations at Tartuchino the following reconstruction is possible. Few, small and fragmentary remains of the Bronze Age were found in the excavation (Attolini and Perkins 1992, 90). No traces of settlement were found, but the finds do suggest occupation of an open site in the area. Extensifying Bronze Age settlers may have cut down the virgin forest, reaped the benefits and moved on. Later, in the later 6th century the site is reoccupied, the secondary forest is cleared and the Etruscan intensifying settlers enjoyed the high marginal returns on arable culture after clearance. This ecological cushion provided the necessary leeway for intensification in the cultivation of vines and olives to sustain the increased population and to create a surplus for disposal. Such a reconstruction provides, a plausible mechanism for the process of settlement of the land and the establishment of the rural settlement pattern which is so evident in the Albegna Valley, southern Etruria, and now in the Ager Caeretanus (Potter 1979, 52-92; Enei, 1992; Rendeli 1993). It also fits the observation that Bronze age and Iron age rural settlements are few and ephemeral where as in the Etruscan period rural settlements become common and substantial. Along with the creation of permanent substantial settlements the cultivation of vines and olives would also have had the effect of creating a new landscape with fixed and permanent olive groves and structured vineyards. These developments would also imply the establishment of long-term land and property rights in the countryside.

However attractive the concept of pioneering Etruscan settlers, in reality the rural settlements cannot be considered in isolation from the whole settlement pattern. The city at Doganella provided the infrastructure which enabled the export of amphorae contents from most of the lower valley and so provided a vital outlet for rural produce (Perkins and Walker 1990, Fig.24). If the calculations from Podere Tartuchino are to be trusted it would seem that polyculture was only partially adopted and that extensive fields of grain were also cultivated in order to provide a surplus above subsistence requirements. The investigation of the relationships between the settlement pattern and the landscape above also suggested a general association between the settlement locations and the land best suited to grain production. Nevertheless, the scale of amphorae production and exportation seen at Doganella (Perkins and Walker 1990, 71-3) should perhaps be seen as a result of the purposeful manipulation of polyculture to produce large surpluses of wine or olives, possibly at the expense of arable farming. Thus the development of a rural settlement pattern and an urban centre should be seen as mutually dependant. The rural settlements could only be founded with the intention of developing intensive polyculture once the economic structures represented in the urban centre were established; and those economic structures depended upon the productivity of the countryside.

Field survey tends to focus upon rural settlement more than urban settlement and one of the major achievements of this form of research has been the recovery of rural settlement patterns from many parts of the Mediterranean basin. However the results of this survey work have shown that the Etruscan cities, and to a lesser extent the minor centres dominated the human settlement of the Albegna Valley and Ager Cosanus. A reconstruction of the population size and distribution in the survey area suggests that as much as 70% of the total population may have lived in the city at Doganella between the sixth and the third centuries. This high proportion suggests that city dwellers may have depended to some extent for their food supplies on the smaller rural population, but it also raises the possibility that many city dwellers may also have engaged in agriculture in the lands surrounding the city. This possibility is reinforced by the large number of storage vessels (*pithoi*) found in the city. This blurring of the differentiation between city and country dwellers is another indication of the intricate association between the two in the Etruscan period.

Along with the circulation of agricultural produce the survey has produced a variety of evidence for exchange in ceramics produced in the city at Doganella, elsewhere in the valley and imported from outside. The distribution patterns observed in the survey evidence indicate that there was a high level of exchange and circulation of ceramics within the Albegna Valley and Ager Cosanus. This involved both local products and ceramics from neighbouring areas, Cerveteri and southern Etruria. Amphora finds provide further evidence for contact with other parts of Etruria and also with a broad area of the Aegean and Eastern Mediterranean. However amphorae from Massilia are conspicuously absent. Further evidence for contacts with the Greek world is provided by the presence of Corinthian and Attic fine painted wares in tombs in the Albegna Valley and Ager Cosanus. Intense exchange between Greece and central coastal Etruria is well documented (e.g. Cristofani 1981, 194-209) but the survey evidence adds to this by showing that exchange also involved internal activity and contact with other parts of Etruria. This evidence for the circulation of ceramics has been found because of the methodology used in the analysis of the ceramics. The identification of fabric types as the principal differentiating factor between pot sherds and the study of the distribution of the different fabrics has enabled the identification of patterns of exchange. If emphasis had been placed on other criteria, function or morphology for example, these patterns of exchange would not have been found.

Along with this urbanisation, development of a rural settlement pattern, intensification in agriculture and growth of exchange in ceramics and agricultural produce burial practices also changed. Inhumation in single graves ceases and is replaced by burial in a communal chamber tomb with a reduced range of grave goods. In the chamber tombs it is not possible to identify an elite marked by burial place or burial practice. These changes suggest that urbanisation and agricultural intensification were accompanied by changes in social structure, with no evidence for an elite and more emphasis on communal, or kinship bonds. These tombs are

similar to others found at Saturnia in the upper valley, Castro in the Fiora valley, Celleno to the east of Bolsena, Monteriggione, near Siena and around Chiusi. These parallels define a large area of central Etruria and suggest connections with Central Etruria whereas during the Orientalising period burials found with connections to Vetulonia and Vulci.

By the late sixth century the Etruscan settlement pattern had achieved its maximum extent and the highlands, including Podere Tartuchino were settled. The phase of increasing settlement of the land and population growth ended in the fifth century after a period of rapid expansion, and it is not possible to observe in the survey evidence any changes in agricultural practice in the later Etruscan period. The disruptions to the export patterns of Etruscan amphorae to the south of France (Bouloumié 1992) do not seem to have caused a crisis in the countryside, or even in the city of Doganella although there are no amphorae from the city which may be assuredly dated to the fourth century. There are however changes in burial practice in the lower valley and the chamber tombs seem to fall out of use in the fifth century. In the later Etruscan period there is little clear evidence for the nature of burial practice. The only necropolises known are Hellenistic but were found in the nineteenth century and poorly recorded. In the upper valley there seems to have been more continuity of burials in chamber tombs through much of the Etruscan period.

Overall the survey evidence does not clearly indicate any sort of crisis in the fifth century or a major decline in the Etruscan settlement pattern or organisation. Whatever the political and military effects of Etruscan setbacks in the Tyrhennian were (Pallottino 1984, 195-225), they are not visible in the survey evidence. Such events are commonly perceived in the limited textual evidence and changes in pattern of Greek pottery imports, precisely the forms of evidence which are extremely limited in the survey area. Other parts of Etruria may have been disrupted by the currents of politico-military history but disruption is not evident in the survey findings. That said, the fifth and fourth centuries are still poorly understood and it is difficult to confidently identify material culture from those centuries.

The evidence of the fourth century settlement patterns suggests that there was not a significant reduction or other change in the previously established pattern. Burial evidence from Orbetello and Talamonaccio suggest that these coastal areas may have been thriving and participating in inter-regional exchange. It would seem that the pattern established during the sixth century endured through until the third century.

Roman conquest of the area caused a major disruption of the Etruscan settlement pattern and agricultural system. The Ager Cosanus and Albegna Valley was probably conquered during the first quarter of the third century BC. (Carandini 1985a, 35-37; 1988, 225-34; Torelli 1985, 313-316; Pallottino 1984, 240-241). To the north Roselle was violently taken around 294 and to the east and south Volsinii and Vulci in 281-280. However there is no direct evidence for the conquest of the Albegna Valley at this time. But soon after, in 280 Saturnia and Statonia to the south became Roman *praefecturae* and the *colonia* of Cosa was founded in 273. It seems probable that the city at Doganella was destroyed at this time along with most of the other settlements, between 294 and 280. Only Saturnia, Orbetello and Talamonaccio were still settled after the conquest, and of these only Saturnia went on to be a significant Roman period settlement. Thus the Roman conquest caused a break in the 300 year history of Etruscan urban development. The effects of the conquest upon the Etruscan rural settlement pattern was equally dramatic and the area seems to have been very thinly populated during the third century. An exception to this pattern of disruption is the survival of Etruscan style *pithoi* on Roman period settlements suggesting that even if the Etruscan settlement pattern and agricultural system was swept away by the Roman conquest some elements of the Etruscan economy survived.

During the second century a new settlement pattern emerged with largely different centres and a less pronounced settlement hierarchy. New forms of settlement appeared, villas and settlements along the *Via Aurelia* for example. After the conquest, a new, intensive agricultural system, partially specialising in vines, was established in the area (Carandini 1985a and b; 1988, 109-234, Carandini and Fentress eds. in press). The organisation of this agricultural production documented in the third to first centuries BC around Cosa where amphora production is rural and estate based, is very different to that of the Etruscan period centred upon Doganella. The details of the Romanization of the survey area are beyond the scope of this work and are documented in the survey report (Carandini and Fentress eds. in press).

The Albegna Valley and the Ager Cosanus are now areas which have been intensively explored. Both the broad patterns, found by survey, and some details, found by excavations at Podere Tartuchino have now been identified, so what can future research achieve? The survey has revealed a changing Etruscan settlement pattern which contains regional variations and these need to be explored. Excavation of a farm site in the lower valley would enable the comparison of a fairly isolated farm in the upper valley with another that was part of the mobilisation of food production for exchange which seems to have been so important to the city at Doganella. Another urgent research aim is the identification of the final destination of more of the Doganella amphorae, so that the relationship between the city state and the wider Mediterranean world may be explored. Were the vessels only used for exchange within the Albegna Valley or is there a distribution of the amphorae in other areas of Italy, southern France or Spain awaiting discovery? So far, published examples of Etruscan amphorae from these areas do not match those made at Doganella. Another major contribution would be the excavation of the amphorae kilns at Doganella. These are the only known Etruscan amphora kilns and at present we may only speculate about how they worked and were organised. Returning to the settlement pattern, all levels of the hierarchy have been explored by excavation except that of the village. This class of settlement

is still relatively unexplored in Etruria with the exception of Lago dell'Accesa (Camporeale 1997), and the villages in the coastal strip around the mouth of the Chiarone also offer the possibility of studying the continuity between the Etruscan and earlier periods. At the other end of the chronological span, the fourth and third centuries are poorly understood. The burial rite in this period is not well represented and appears to be different from neighbouring areas. Furthermore a lack of precision in the dating of pottery means that there are few sites that can be closely dated to these centuries. The Roman conquest overshadows other changes which may have occurred in the late Etruscan period.

To conclude the results of this survey and artefact research may be held up against Torelli's vision of an archaeological history (see above p.2). The specific parts of this were: the contextual interpretation of traditional epigraphic and linguistic sources – this research has made no contribution to that area; the iconological reading of art – this topic has not been touched upon; the diachronic study of urban morphology – this area has been investigated with reference to the city at Doganella and the minor centres in the valley; the study of trade and consumption, particularly with reference to the Greek world – as a theme this has formed a major part of this research but with scant reference to the Greek world; and finally, the socio-economic study of production in relation to social forces – which is an underlying theme of this research although it has not been related to political history since the area has none surviving until the Roman period. Evidence from field survey is clearly not useful for advancing the study of linguistic, epigraphic or artistic sources. These areas are much more closely related to the traditional field of Etruscan studies, mortuary archaeology. The urban focus of Torelli's agenda has been counterbalanced in this study by a detailed study of the rural settlements. However, the divide between rural and urban has not been emphasised since both are a part of the continuum of human settlement in a landscape, and significant advances in the understanding of both urban and rural systems have been made. The 'the socio-economic study of production' is a broad phrase capable of covering most artefact studies which aim to progress beyond straightforward description and this is what this research has attempted to do by relating artefact studies to settlement patterns and interpreting artefact distributions. However production has not only been studied with relation to social forces, settlement patterns, resources and environmental factors have also been considered.

Moving outside of Torelli's recommended areas of study this research has investigated the configuration of the Etruscan landscape, with reference to settlement patterns. The relationship between the landscape and the development of Etruscan society and culture is a theme which emerges from this survey and the Etruscan social and cultural development has been firmly rooted in its environmental setting. The survey work does not however demonstrate that the natural environment determined Etruscan development, on the contrary the environment was exploited and manipulated by a settlement and agricultural regime which was driven by social development and population growth.

Torelli also asserts that the Etruscans should not be studied in isolation, but in relation to the major Mediterranean civilisations the Greeks, Romans Phoenicians and Carthaginians. This research has not been operating at this high level. In a sharp contrast it has been focused upon building a detailed account of the Etruscan archaeology of the region from a self contained body of evidence which does not end up with the Etruscans being a pale reflection of other great civilisations.

Appendix 1. The sites

Key

Geol. = geology
The codes for the classes of geology are the same as those used on the 1:100,000 geological maps of the Servizio Geologico d'Italia.

Vegetation
These are self explanatory apart from mixed areas where the following abbreviations occur in many combinations:-Bram= Brambles, Buil = Built upon, Oliv = Olive grove, Vine = Vineyard, Fall = Fallow, Harr = Harrowed land, Macc = Macchia, Orch = Orchard, Past = Pasture, Plou = Ploughed, Stub = Stubble, Vege = Vegetables, Wood = Woodland.

Vis. = Visibility
A subjective measure of the visibility of objects on the ground surface on the following scale: 1 = Macchia, woodland or brambles, 2 = Tall pasture, stubble or grassland, 3 = Grazed pasture or fallow, 4 = Vegetable fields, young crops, harrowed, recently ploughed vinyard, 5 = Ploughed.

Den. = Density
Observed density of surface scatter, estimated as:1 = <1sherd/m², 2 = 1-2 sherds/ m², 3 = 3-5 sherds/ m², 4 = 6-20 sherds/ m², 5 = >20 sherds/ m².

Size x/y
Estimate of the size of the site in two dimensions.

Definition
For the type of contact with the archaeological record, usually a surface scatter, but others are self explanatory apart from the following which may occur in any combination: Struct. = Structure, Str = Structure, Sca = scatter, Excav. = Excavation, Bibliog = Bibliograhic information, Info = Informant testimony.

7th, 6th, 5th etc.
Indication of dating evidence for each century: X = None, N = Negligible, B = Bad, G = Good. The significance of these estimations is explained in chapter 3.

Sites

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
CAP2.2	s	Stubble	3	0	House/Tomb	0	0	UT 1 is a Roman Villa.	Scatter		N	N	N	N	N	G
CAP3.0			0	0	Villa	0	0				X	X	X	X	G	G
CAP7.0	sd	Vinyard	4	1	Tomb	0	0	3 Blocks of squared tufo 1 sheet of travertine.	Scatter		G	G	B	B	N	X
CAP8.0	sd	Plou	5	1	Tomb	0	0		Scatter		N	N	N	N	N	X
CAP10.2	sd	Plou	4	0	House/Tomb	0	0	Material found in UT 1- a Roman House with squared stone.	Scatter		N	N	N	N	N	N
CAP12.0	a	Plou/ Vine	5	5	House	30	30	Traces of walls aligned at 56 degrees.	Scatter	Levi 1927	X	X	X	X	N	G
CAP13.0	a	Vege	3	2	House	20	20		Scatter		X	X	X	X	X	N
CAP16.0			0	0	Villa	0	0				X	X	X	X	X	G
CAP19.0			0	0	House2	0	0	Giardino Vecchio excavated 1981-2.	Struct.	Carandini 1985	X	X	X	X	X	G
CAP22.0	a	Plou	5	5	Necropolis	0	0		Scatter		X	X	X	X	X	G
CAP24.2	a	Plou	5	0	House/Tomb	15	15	Material found in UT 1 - a Roman House2.	Scatter		N	N	N	N	N	G
CAP29.0	a	Plou	5	1	House	0	0		Scatter		X	X	X	X	X	N
CAP30.0	a	Plou	5	1	House	0	0		Scatter		X	X	X	X	X	G
CAP31.2	cv	Plou	5	5	House/Tomb	40	100	Material found in UT 1 - a Roman village and kiln.	Scatter		N	N	N	N	N	N
CAP32.2	cv	Harr	4	5	House/Tomb	50	40	Material found in UT 1 - a Roman House2 = Dyson 1978 site 18.	Scatter	Dyson 1978	N	N	N	N	N	G
CAP33.1	tro	Fallow	2	2	Scatter	50	50	UT 0 is a Roman House.	Scatter		B	G	G	G	N	G
CAP34.0	tro	Plou	5	5	Necropolis	50	50	Scatters aligned North - South. UT 1 is Roman scatter.	Scatter		B	G	G	G	G	N
CAP38.0	a	Harr	4	2	House	15	15		Scatter		X	X	X	X	X	N
CAP39.0	a	Stubble	3	2	House	30	30		Scatter		X	X	X	X	X	N
CAP40.0	cv	Plou	5	3	House	20	20		Scatter		X	X	X	X	X	N
CAP41.2	a	Plou/ Fall	0	0	Necropolis/ House	100	100	Material found in UT 1 - a Roman villa.	Scatter		N	N	N	N	G	G
CAP42.0	dt	Fallow	2	2	House	15	15		Scatter		X	X	X	X	X	N
CAP43.1	tro	Plou	5	2	Scatter	10	10		Scatter		B	G	G	G	N	X
CAP44.0	dt	Macc/ Vine	3	2	Necropolis	25	25		Scatter		N	N	N	N	N	X
CAP45.0	a	Fallow	1	1	Villa	0	0	Informed of mosaic.	Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
CAP46.0		Plou	5	5	Village/ Kiln	100	100		Scatter		G	G	G	G	G	G
CAP47.0	cv	Plou/ Macc	2	3	House2	0	0	Traces of walls in polygonal blocks.	Scatter		X	X	X	X	G	G
CAP48.0	cv	Macc	1	0	Necropolis	0	0	Chamber and trench tombs excavated in the rock (Levi). Informed of a 'Corinthian Vase'	Excav.	LEVI 1927	B	B	B	N	N	X
CAP50.0	tro	Plou	5	3	House	20	20		Scatter		B	G	G	B	N	X
CAP51.0	cp	Macc	1	4	Villa	100	150		Str&Sca		X	X	X	X	X	N
CAP52.2		Plou	5	5	House/Tomb	0	0	Material found in UT 1 - a Roman villa with Opus Spicatum; Mosaic etc.	Scatter		N	N	N	N	G	G
CAP54.0	cv	Macc	1	5	Necropolis	0	0	Chamber and trench tombs excavated in the rock (Levi).		LEVI 1927	N	N	N	N	N	X
CAP55.0	cv	Macc	1	5	Tomb	0	0	Chamber tomb with wall of large blocks of limestone and a tumulus of stones. Other tumuli in area (LEVI)	Struct.	LEVI 1927	B	G	N	N	N	X
CAP58.0	a	Plou/ Macc	3	5	House2	20	30		Scatter		X	X	X	X	N	G
CAP59.0	cv	Macc	1	1	Fortified Hill Top	0	0	Remains of a dry stone defensive wall.	Struct.		N	N	N	N	N	X
CAP61.0	cv	Plou/ Macc	2	0	Road	0	0	Worn limestone blocks.	Scatter		X	X	X	X	X	N
CAP63.0	tro	Plou/ Macc	2	1	Necropolis	0	0	=CAP 172	Scatter		G	G	G	G	N	X
CAP64.2		Fallow	3	5	House/Tomb	0	0	Material found in UT 1 - a roman kiln site.	Scatter		N	G	G	N	N	G
CAP65.1			0	0	Fortified Hill Top	0	0	Capalbio castle. ? Fortified hill top.	Scatter		N	N	G	N	N	X
CAP66.0		Wood	0	0	Fortified Hill Top	0	0	Monteti. Fortification wall visible in air photo and on the ground. 2 ?Etruscan sherds found.	Struct.	Cosci 1988	N	N	N	N	N	X
CAP68.0			0	0	Villa	0	0		Scatter		X	X	X	X	X	G
CAP73.2			0	0	House/Tomb	0	0	Also a Roman house.	Scatter		G	G	B	B	N	G
CAP83.0	csr	Plou	4	2	House2	30	30		Scatter		X	X	X	X	G	G
CAP86.0	cv	Plou	5	4	House	20	20		Scatter		X	X	X	X	X	G
CAP87.0	pcg	Plou	4	3	House/Tomb	10	10		Scatter		B	B	B	B	N	X
CAP88.2	sd	Plou	5	5	Necropolis/ House	100	100	Material found in UT 1 - a Roman villa.			B	G	G	G	N	G
CAP89.1	sd	Fallow	2	2	Necropolis	20	20		Scatter		B	G	G	G	N	X
CAP90.0	a	Fallow	2	2	Villa	100	100		Scatter		X	X	X	X	X	G
CAP91.0	sd	Fallow	2	1	Necropolis	100	100	Informed of tombs in surrounding area.	Scatter		B	B	B	B	N	X
CAP92.0		Harr	2	1	House	0	0		Scatter		N	G	N	N	N	X
CAP93.0		Fallow	2	4	Necropolis	5	5	Visible in section.	Scatter		G	G	G	G	G	G
CAP95.0		Plou/ Fall	2	1	Scatter	50	500				N	B	G	G	N	X
CAP96.0	dt	Macc/ Vine	2	2	House2	30	50		Scatter		X	X	X	X	X	N
CAP97.2	dt	Macc/ Vine	5	5	Necropolis	0	0	2 Fragments of Bucchero found in UT 1 - a Roman villa; limestone tesserae found.	Scatter		B	G	G	N	G	G
CAP98.2	gp	Macc	1	1	Necropolis	100	300	Material found in UT 1 - a Roman villa.	Scatter		G	G	G	G	N	X
CAP99.1	sd	Vege	2	2	Necropolis	50	50		Scatter		B	B	G	G	N	X
CAP100.0	cv	Macc	1	5	Village	80	100		Scatter		B	G	G	G	G	X
CAP103.0	dt	Fallow	2	3	Villa	0	0		Scatter		X	X	X	X	X	G
CAP105.0		Macc	1	2	Villa	0	0		Scatter		X	X	X	X	X	N
CAP107.0		Macc	1	0	Necropolis	0	0		Scatter		N	N	N	N	N	X
CAP152.0	p	Fallow	2	2	Kiln?	0	0		Scatter		X	X	X	X	X	G
CAP153.1	cv	Macc	1	2	House	0	0		Scatter		N	N	N	N	N	X
CAP157.1	cv	Plou	4	4	Scatter	50	50	Material found in UT 0.	Scatter		B	B	G	B	N	X
CAP158.0	p	Plou	4	3	House/Tomb	0	0	=CAP 87	Scatter		B	B	B	B	N	X
CAP159.0	a	Plou/ Past	4	4	Necropolis	50	500	5 concentrations aligned in 2 north east - south west lines.	Scatter		B	B	B	G	G	X
CAP159.1	a	Plou/ Past	4	4	Necropolis	10	10		Scatter		N	N	N	N	N	X
CAP159.2	a	Plou/ Past	4	4	Necropolis	30	30		Scatter		G	G	G	G	G	X
CAP159.3	a	Plou/ Past	4	4	Necropolis	10	10		Scatter		B	B	B	B	N	X
CAP159.4	a	Plou/ Past	4	4	Necropolis	10	10		Scatter		B	G	G	G	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
CAP159.5	a	Plou/ Past	4	4	Necropolis	10	10		Scatter		N	G	G	G	N	X
CAP164.0	a	Plou	5	4	Necropolis	200	200	7 distinct areas in 2 lines running north east - south west.	Scatter		N	N	N	N	N	X
CAP164.1	a	Plou	5	4	Necropolis	30	30		Scatter		N	G	G	B	N	X
CAP164.2	a	Plou	5	4	Necropolis	30	30		Scatter		G	G	G	G	G	X
CAP164.3	a	Plou	5	4	Necropolis	30	30		Scatter		B	B	G	G	N	X
CAP164.4	a	Plou	5	4	Necropolis	30	30		Scatter		N	B	G	B	N	X
CAP164.5	a	Plou	5	4	Necropolis	30	30		Scatter		B	B	B	B	N	X
CAP164.6	a	Plou	5	4	Necropolis	30	30		Scatter		G	G	G	G	N	X
CAP164.7	a	Plou	5	4	Necropolis	30	30		Scatter		N	N	N	N	N	X
CAP172.0			0	0	Necropolis	0	0		Scatter		G	G	G	G	N	X
CAP174.0		Fallow	2	2	House/Tomb	0	0		Scatter		G	G	G	G	G	X
CAP251.1	p		0	0	Necropolis	0	0	UT 2 is a Roman villa.	Scatter		B	B	B	B	N	G
CAP252.0			0	0	House/Tomb	50	20	Also Roman dating.	Scatter		B	B	B	B	N	N
CAP253.0	mcg	Plou	5	0	Necropolis	3	2		Scatter		G	G	G	B	N	X
CAP254.0	csr	Stubble	2	0	Tomb	5	5		Scatter		N	N	N	N	N	X
CAP255.0	dt	Plou	4	0	House	20	20		Scatter		X	X	X	X	X	G
CAP256.0	dtr	Plou	5	0	Necropolis	50	50		Scatter		B	G	G	G	N	X
CAP258.2	dt	Fallow	2	0	Necropolis	5	5		Scatter		N	N	N	N	N	N
CAP260.0	a	Plou	5	0	Villa	100	100		Scatter		X	X	X	X	G	G
CAP266.0	a	Plou/ Past	3	0	Necropolis	200	200		Scatter		N	N	N	N	N	X
CAP300.0			0	0	House	0	0				X	X	X	X	X	N
CAP301.0			0	0	House	0	0				X	X	X	X	X	N
CAP305.0			0	0	House	0	0				X	X	X	X	X	N
CAP309.0			0	0	House	0	0				X	X	X	X	X	N
CAP310.0			0	0	House	0	0				X	X	X	X	X	N
CAP315.0			0	0	Villa/ Necropolis	0	0		Bibliog		X	X	X	X	X	N
CAP320.0			0	0	Necropolis	0	0	Found by Levi.	Bibliog	Levi 1927	N	N	N	N	N	X
CAP321.0			0	0	Necropolis	0	0	Found by Levi.	Bibliog	Levi 1927	N	N	N	N	N	X
CAP322.0			0	0	Necropolis	0	0	Found by Levi.	Bibliog	Levi 1927	N	N	N	N	N	X
CAP323.0			0	0	Necropolis	0	0	Found by Levi.	Bibliog	Levi 1927	N	N	N	N	N	X
CAP324.0			0	0	Necropolis	0	0	Found by Levi.	Bibliog	Levi 1927	N	N	N	N	N	X
CAP327.0			0	0	House	0	0				X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
COL1.0	mg	Stub/ Oliv	2	1	House/Tomb	15	15	Roman house.	Scatter		B	G	G	G	N	G
COL2.0	mg	Stub/ Past	2	1	House	20	15		Scatter		B	G	G	B	N	X
COL3.0	a	Stubble	3	1	House/Tomb	15	15		Scatter		X	X	X	X	X	N
COL5.0	mg	Vege /Stub	3	1	House	30	20		Scatter		B	G	G	G	N	X
FP1.0			0	0	House	15	20		Scatter		X	X	X	X	X	G
FP2.0	n	Past/ Buil	3	2	House	50	70		Scatter		X	X	X	X	X	G
FP3.0	ps	Plou	5	3	House2	70	50	Squared travertine found.	Scatter		X	X	X	X	X	G
FP4.0		Plou	5	4	House	30	15		Scatter		B	B	G	G	N	X
FP5.0	pa	Plou	5	2	House	30	40		Scatter		N	N	N	N	N	X
FP7.0	ps		0	0	House/Kiln	25	30	Bricks and column tiles; opus spicatum; wasters	Scatter		X	X	X	X	X	N
FP8.2	n	Plou	5	4	House/Tomb	105	75	Material found in UT 1 - a Roman villa/kiln. Kiln bricks; wasters; burnt clay and column drum found.	Scatter		B	B	B	B	G	G
FP9.0	mg	Plou	5	4	House/Kiln	65	75		Scatter		X	X	X	X	X	N
FP10.0	pcg	Past/ Wood	1	0	House	15	20		Scatter		X	X	X	X	X	G
FP12.0	pcg	Built up	0	0	Villa	0	0	Column drums; capital; inscriptions in church; foundations.	Str&Sca		X	X	X	X	X	N
FP13.3			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		G	G	G	B	N	X
FP16.0	pa	Plou/ Oliv	3	3	House	40	15		Scatter		X	X	X	X	X	N
FP17.0	mcg	Plou	4	3	House	50	40		Scatter		X	X	X	X	X	G

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
COL1.0	mg	Stub/ Oliv	2	1	House/Tomb	15	15	Roman house.	Scatter		B	G	G	G	N	G
FP18.0	pcg	Stub/ Macc	3	4	Villa	200	150	Column drums; dolia; collapsed walls; opus spicatum found.	Scatter		X	X	X	X	X	G
FP20.0	pcg	Pasture	4	4	House2	110	60		Scatter		X	X	X	X	X	G
FP21.0	pcg	Plou/ Vine	3	2	House/Tomb	10	10		Scatter		X	X	X	X	X	N
FP22.0	pcg	Plou/ Vine	4	5	Villa	120	70	Squared stones; dolia found.	Scatter		X	X	X	X	X	G
FP23.0	pcg	Plou	5	5	House	40	50	Pithoi found.	Scatter		G	G	G	B	N	X
FP24.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		N	N	N	N	N	X
FP25.0	pcg	Stubble	2	2	Necropolis	200	200	Tombs excavated in tufaceous soil.	Struct.		B	B	B	B	N	X
FP28.0	pcg	Stubble	2	2	House/Tomb	30	20		Scatter		B	B	B	B	N	X
FP29.0	pa	Plou/ Stub	3	3	House2	40	20		Scatter		X	X	X	X	X	G
FP31.1	ps	Stubble	3	3	House/Tomb	15	20		Scatter		B	G	G	B	N	N
FP325.0	np	Plou	5	4	House	20	30		Scatter		X	X	X	X	X	G
FP33.0	ps	Plou	5	3	House/Tomb	15	40		Scatter		X	X	X	X	X	N
FP34.2	ps	Plou/ Oliv	3	5	House/Tomb	60	80	Smooth and fluted column drums found in UT 1 a Roman villa.	Scatter		N	N	G	N	N	G
FP35.0			0	0	House	0	0				X	X	X	X	X	G
FP37.0	ps	Plou	5	5	House2	50	60		Scatter		X	X	X	X	X	G
FP38.0	pcg	Plou/ Vine	3	3	House2	30	20	Cocciopesto found.	Scatter		X	X	X	X	N	G
FP42.0	np	Plou/ Stub	3	3	House	30	35		Scatter		X	X	X	X	X	G
FP45.0	np	Stubble	3	4	House	30	30		Scatter		X	X	X	X	X	G
FP46.1	ps	Stub/ Buil	3	4	Villa	50	60	Squared and moulded travertine found.	Scatter		X	X	X	X	X	G
FP46.2	ps	Stub/ Buil	3	4	Tomb	0	0	Squared and moulded travertine with relief decoration found.	Scatter		X	X	X	X	X	G
FP49.0	pa	Stubble	3	3	Villa	150	200	Column drum found.	Scatter		X	X	X	X	X	N
FP50.0	pa	Plou	5	4	House	25	25		Scatter		X	X	X	X	X	G
FP51.0	pa	Plou	5	5	House2	60	50	Traces of a kiln. Opus spicatum and loom weight found.	Scatter		X	X	X	X	X	G
FP53.1	ps	Past/ Oliv	2	1	House	40	40		Scatter		X	X	X	X	X	N
FP53.2	ps	Past/ Oliv	2	1	House	50	40		Scatter		X	X	X	X	X	N
FP54.0	np	Pasture	2	2	Village?	100	150		Scatter		X	X	X	X	X	N
FP56.0	np	Plou	5	3	House	20	25		Scatter		X	X	X	X	X	G
FP58.0	np	Pasture	2	3	Villa/Village	200	220	Small cubes of tile; dolia and kiln bricks found.	Scatter		X	X	X	X	X	N
FP59.0	np	Pasture	3	2	House2/Villa	100	70	Traces of walls; 1 aligned at 56 degrees.	Struct.		X	X	X	X	X	G
FP61.1	pcg	Plou	5	5	Minor Centre	200	500	Ghiaccioforte. Sanctuary suggested by figurine. Informed of cemeteries on northern slope.	Struct.	Del Chiaro 1976; Rendini 1985	G	G	G	G	B	X
FP71.0	pcg	Stubble	2	2	House	30	20	Visible in air photo; informed of walls.	Scatter		X	X	X	X	N	N
FP72.0	pa	Plou	5	3	House/Tomb	5	8		Scatter		X	X	X	X	X	N
FP73.0	pa	Plou	5	3	House/Tomb	5	5		Scatter		X	X	X	X	X	N
FP74.2	gp	Plou/ Vine	3	2	House/Tomb	50	30		Scatter		N	N	N	N	N	X
FP75.0	pa	Stubble	2	3	House2	40	30		Scatter		X	X	X	X	X	N
FP76.0	pa	Stubble	2	4	House2	40	30		Scatter		X	X	X	X	N	N
FP77.1	pa	Plou	3	4	House/Kiln	25	25		Scatter		X	X	X	X	X	N
FP78.0	pa	Plou	5	4	House	15	10		Scatter		X	X	X	X	N	N
FP100.0	pa	Plou/ Oliv	4	1	House/Tomb	5	5		Scatter		N	N	N	N	N	N
FP101.0	ps	Wood	4	1	Tomb	4	3	Dromos (c.2.25 x .75m) to south east; robbed chamber (c.1.75x1m) and tumulus (c.6m. d) built of conglomerate slabs.	Struct.		B	G	N	N	N	X
FP102.2	pa	Plou	5	1	Necropolis	20	20	UT 1 is a Roman house.	Scatter		N	G	G	B	N	G
FP103.0	pcg	Built up	3	2	House2	50	50		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog.	7th	6th	5th	4th	3rd	2nd
COL1.0	mg	Stub/ Oliv	2	1	House/Tomb	15	15	Roman house.	Scatter		B	G	G	G	N	G
FP105.0	pcg	Plou/ Stub	3	1	House2	60	30	Opus spicatum found.	Scatter		X	X	X	X	N	G
FP107.0	pcg	Plou/Stub	5	1	House/Tomb	15	15		Scatter		X	X	X	X	X	G
FP108.0	pcg	Stubble	3	1	House2	75	75	Opus spicatum found.	Scatter		X	X	X	X	G	G
FP109.0	pcg	Plou	5	1	House	15	15		Scatter		X	X	X	X	X	N
FP110.0	f	Vege	2	1	House	20	25	1 sherd of pithos found.	Scatter		B	B	B	B	N	X
FP111.0	pcg	Plou	2	1	House/Tomb	15	15		Scatter		B	G	G	B	N	X
FP113.0	pcg	Plou	3	1	House	30	25	Kiln close by at FP 114. Also a Roman house.	Scatter		N	N	N	N	N	N
FP114.1	pcg	Plou	5	2	House/Tomb	15	15	'Pottery and pithoi found.	Scatter		B	G	G	G	N	X
FP114.2	pcg	Plou	5	2	House/Tomb	5	5		Scatter		B	B	G	B	N	X
FP114.3	pcg	Plou	5	2	House/ Kiln	10	10	Grinding stone; poorly fired tiles found.	Scatter		B	B	G	G	N	X
FP114.4	pcg	Plou	5	1	House/ Kiln	10	10	Few poorly fired tiles found.	Scatter		B	G	G	B	N	X
FP114.5	pcg	Plou	5	1	House	10	10	Many pithoi found.	Scatter		G	G	G	B	N	X
FP115.2		Plou/Vine	5	1	House/Tomb	50	60	UT 1 is a Roman house2 with opus spicatum and coccio pesto.	Scatter		B	B	B	B	N	G
FP116.1	pcg	Plou	5	2	House/Tomb	15	15		Scatter		B	G	G	G	N	X
FP116.2	pcg	Plou	5	2	Kiln	10	5	Poorly fired tiles and burnt clay found.	Scatter		B	B	B	B	N	X
FP116.3	pcg	Plou	5	2	House/Tomb	10	5	Pithoi found.	Scatter		N	N	N	N	N	X
FP116.4	pcg	Plou	5	1	House/Tomb	5	5		Scatter		N	G	N	N	N	X
FP300.0	pcg	Plou	5	5	Villa	100	60	Column drums found.	Scatter		X	X	X	X	X	G
FP301.0	pcg	Vege	3	4	Villa	90	60	Informed of mosaics.	Scatter		X	X	X	X	X	G
FP303.0	np	Plou	5	5	Villa	10	150	Road stones; opus spicatum; lozenge tiles; press base found. Columns in Scansano square; excavated 1987- by Del Chiaro	Exc&Sca	Del Chiaro 1990	X	X	X	X	X	G
FP305.0		Stub/Buil	3	3	Villa	45	100	Marble fragments found.	Scatter		X	X	X	X	X	N
FP350.0	pa	Pasture	3	3	House	20	15	Loom weight found.	Scatter		X	X	X	X	X	N
FP352.0	pa	Pasture	1	1	House/Tomb	20	15	Informed of walls.	Scatter		X	X	X	X	X	N
FP358.0	np	Plou	4	4	House2	45	100		Scatter		X	X	X	X	X	G
FP359.0	a	Vege	3	4	House	25	30		Scatter		X	X	X	X	X	G

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
LC1.0	a2	Plou/Vine	5	1	House/Tomb	15	15		Scatter		N	N	N	N	N	X
LC2.0	a2	Ploughed	5	1	House/Tomb	30	100		Scatter		N	B	G	B	N	X
LC3.0	par	Ploughed	5	1	House/Tomb	5	5		Scatter		X	X	X	X	X	N
LC4.0	par	Ploughed	5	1	House	15	15		Scatter		X	X	X	X	X	N
LC5.0	a2	Ploughed	5	1	House	15	15		Scatter		N	N	N	N	N	X
LC6.0	a2	Ploughed	5	1	House	30	30		Scatter		X	X	X	X	X	N
LC7.0	mg	Ploughed	5	1	House2	35	35		Scatter		X	X	X	X	X	N
LC8.0	p	Stub/Oliv	2	1	Village?	100	100		Scatter		X	X	X	X	X	G
LC9.0	p	Ploughed	5	2	Necropolis	100	200	20 concentrations 5x5m. each in a row.	Scatter		X	X	X	X	X	G
LC10.2	p	Ploughed	5	2	House/Tomb	40	40	UT1 is a Roman house.	Scatter		N	G	G	G	G	G
LC12.0	mg	Ploughed	5	1	Tomb	5	5		Scatter		N	G	G	G	G	N
LC20.0	p	Ploughed	5	1	House	30	25		Scatter		X	X	X	X	X	N
LC22.0	p	Ploughed	5	1	Tomb	5	5		Scatter		X	X	X	X	X	N
LC23.0	p	Ploughed	5	1	House	30	30		Scatter		N	N	N	N	N	X
LC24.0	a2	Ploughed	5	1	Tomb	5	5		Scatter		X	X	X	X	X	G
LC25.0	mag	Ploughed	5	1	House	20	20		Scatter		X	X	X	X	N	G
LC26.0	mg	Ploughed	5	1	Tomb	5	5		Scatter		X	X	X	X	X	N
LC28.0	dt	Ploughed	5	1	House	35	15		Scatter		X	X	X	X	X	N
LC29.0	mg	Ploughed	3	1	Necropolis	40	30		Scatter		X	X	X	X	X	N
LC30.0	t56	Plou/Vine	5	1	House	30	25		Scatter		N	N	N	N	N	X
LC31.0	dt	Ploughed	5	1	Tomb	5	5		Scatter		X	X	X	X	X	N
LC32.2	t56	Stubble	3	1	House/Tomb	30	30		Scatter		G	G	G	G	N	X

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
LC33.1	mg	Stubble	3	1	House	30	30		Scatter		X	X	X	X	X	N
LC34.1	t56	Wood/Bram	2	1	Fortified Hill Top	130	80	Defensive dry-stone wall around the hill top 1.5m thick; possible gate.	Struct.		N	N	N	N	N	X
LC34.2	t56	Wood/Bram	1	2	Fortified Hill Top	70	60	Dry-stone defensive wall cf. LC 34.1.	Struct.		N	N	N	N	N	X
LC36.0	dt	Ploughed	5	1	House/Tomb	15	15		Scatter		X	X	X	X	X	N
LC38.0	a3	Ploughed	5	1	House/Tomb	10	10		Scatter		X	X	X	X	X	G
LC39.1	a3	Ploughed	5	1	House/Tomb	10	15		Scatter		G	G	G	G	N	N
LC42.1	t56	Ploughed	5	1	Village	40	30		Scatter		N	N	N	N	N	X
LC43.0	a3	Ploughed	5	1	House	40	40		Scatter		N	N	N	N	N	X
LC46.0	a1	Ploughed	5	1	House2	35	35		Scatter		X	X	X	X	X	G
LC47.0	a1	Stubble	3	1	House2	50	40		Scatter		X	X	X	X	X	N
LC48.0	t56	Brambles	0	0	Bridge	0	0	2 Pilasters of large squared irregular blocks 4.3m wide; 4.5m apart.	Struct.		X	X	X	X	X	N
LC50.0	a2	Ploughed	5	1	House	45	40		Scatter		N	N	N	N	N	X
LC51.0	t56	Ploughed	5	1	House	30	25		Scatter		G	G	G	G	N	X
LC52.0	t65	Ploughed	5	1	House	20	20		Scatter		N	N	N	N	N	X
LC101.2	p	Ploughed	5	2	House/Tomb	50	50	UT 1 is a Roman necropolis	Scatter		G	G	G	G	G	N
LC103.1	p	Ploughed	5	1	House	15	15		Scatter		N	N	N	N	N	N
LC105.0	mg	Ploughed	5	1	House/Kiln	40	40		Scatter		X	X	X	X	X	N
LC107.1	p	Plou/Macc	5	3	Villa/Kiln	125	40	Opus sectile; column bricks; squared blocks and possible remains of criptoporticus.	Scatter		X	X	X	X	N	G
LC109.1	par	Ploughed	5	3	Villa/Kiln	75	75	Squared blocks; tesserae; opus spicatum; glass; slag burnt clay etc.	Scatter		X	X	X	X	X	G
LC110.0	p	Stubble	3	1	Tomb	25	25		Scatter		N	N	N	N	N	X
LC111.0	par	Plou/Stub	4	1	House/Tomb	20	20		Scatter		X	X	X	X	X	N
LC112.0	tr	Plou/Stub	4	1	House	20	20		Scatter		B	G	G	G	G	X
LC113.0	p32	Stubble	2	1	House	25	25		Scatter		G	G	B	B	N	G
LC114.2	p	Harr/Vine	3	2	House2/Kiln	50	50	Blocks of travertine and opus spicatum found.	Scatter		X	X	X	X	N	G
LC116.0	p	Plou/Buil	3	1	House	30	30		Scatter		X	X	X	X	X	G
LC117.0	p	Stubble	3	1	House/Tomb	15	15		Scatter		B	B	B	B	N	X

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAG1.0	mg	Ploughed	4	4	House2	30	40		Scatter		X	X	X	X	X	G
MAG2.0	mg	Stubble	2	3	House2	30	80	Opus spicatum found.	Scatter		X	X	X	X	G	G
MAG3.0	n	Stubble	2	3	House2	40	30	Terracing with foundations and remains of walls; opus spicatum found.	Scatter		X	X	X	X	X	G
MAG4.1	mg	Ploughed	5	4	Scatter	40	40	Material found in UT 0; a Roman villa with column drums and travertine blocks.	Scatter		B	G	G	B	N	G
MAG5.0	n	Stubble	2	0	House/Tomb	5	5		Scatter		X	X	X	X	X	N
MAG6.1	mg	Plou/Vine	3	3	House	25	30		Scatter		X	X	X	X	X	G
MAG7.0	mg	Vines	3	1	House	30	40		Scatter		X	X	X	X	X	N
MAG9.0	mg	Vines	3	2	House	0	0		Scatter		X	X	X	X	X	G
MAG16.0	ps	Ploughed	5	1	House	15	30		Scatter		X	X	X	X	X	G
MAG17.0	ps	Ploughed	5	2	Necropolis	5	20		Scatter		B	G	B	B	N	X
MAG19.0	cl	Past/Oliv	2	2	House	25	25		Scatter		N	N	N	N	N	X
MAG10.0	tr	Macchia	2	1	Villa	50	200		Str&Sca		X	X	X	X	X	G
MAG15.0	pcg	Plou/Oliv	5	5	Villa	50	60	Bassis villa with concrete vault; columns and traces of a road seen.	Scatter		X	X	X	X	N	N
MAG20.0	cl	Plou/Oliv	0	0	Necropolis	40	50	Group of 5 tombs cut into the lacustrine limestone; 1 painted with graffiti; robbed out. =MAG201	Struct.	Minto 1935	G	G	G	B	N	X
MAG21.0			0	0	Scatter	40	50				N	N	N	N	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAG22.2	cl	Ploughed	0	0	House/Tomb	20	30	UT 1 is a Roman house and kiln.	Scatter		G	G	G	G	N	G
MAG24.0	cl	Ploughed	5	1	Necropolis	5	5		Scatter		B	B	B	B	N	X
MAG25.0	cl	Ploughed	5	0	Tomb	2	1	Small chamber tomb (1.7x1.1m) with benches on 4 walls. Dromos to south west.	Struct.		B	G	N	N	N	X
MAG50.2	pa	Pasture	2	1	Tomb	25	20	? Limestone tumulus. UT 1 is a Roman house.	Scatter		G	G	G	G	N	G
MAG51.0	csr	Ploughed	5	2	House	15	25		Scatter		X	X	X	X	X	G
MAG52.2		Stubble	2	2	House/Tomb	0	0	UT 1 is Roman.	Scatter		B	B	G	B	N	G
MAG53.0		Ploughed	5	4	Villa	60	80	Cement vault; fluted columns (1 marble); press base found.	Scatter		X	X	X	X	X	G
MAG54.1	ps	Vege/ Vine	1	1	House/Tomb	0	0		Scatter		B	G	G	G	N	G
MAG55.0		Plou/Past	3	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
MAG56.1		Ploughed	5	2	House	15	20		Scatter		G	G	B	B	N	X
MAG56.3		Woodland	1	1	House	0	0		Scatter		N	G	G	N	N	X
MAG57.2		Ploughed	5	2	Necropolis	15	40	UT 1 is a Roman villa. Remains of wall; column drum found.	Scatter		N	N	G	G	N	G
MAG58.3		Ploughed	5	3	House/Tomb	0	0	UT 1 is a Roman house.	Scatter		B	B	B	B	N	N
MAG59.1	mp	Past/Stub	3	3	Villa	50	40	Architectural terracotta found.	Scatter		X	X	X	X	X	G
MAG60.2	mp	Ploughed	4	2	Tomb	1	1	UT 1 is a Roman house2.	Scatter		B	B	B	B	N	G
MAG61.0	mp	Ploughed	5	2	Tomb	3	5		Scatter		X	X	X	X	X	N
MAG62.3	mp	Ploughed	5	2	House/Tomb	25	30		Scatter		N	N	G	N	N	N
MAG64.0	gp	Wood/ Buil	1	0	House2	0	0		Scatter		X	X	X	X	X	G
MAG65.0	gp	Fallow	2	2	House2/ Kiln	40	70		Scatter		X	X	X	X	N	G
MAG66.0	mg	Fallow	2	1	House	5	1		Scatter		X	X	X	X	X	G
MAG67.0	mp	Fallow	2	2	Villa	50	80	Remains of terrace.	Scatter		X	X	X	X	X	N
MAG69.1	gp	Pasture	3	3	Kiln	15	20		Scatter		X	X	X	X	X	G
MAG71.1	mp	Ploughed	5	2	House	20	20		Scatter		X	X	X	X	X	G
MAG72.0	mp	Stubble	2	3	House2	20	20	0pus spicatum and glass found.	Scatter		X	X	X	X	X	G
MAG73.2	mp	Plou/Stub	5	4	House/Tomb	30	50	UT 1 is a Roman house2 with opus spicatum; glass and dolia.	Scatter		N	N	G	N	N	N
MAG75.0	mp	Pasture	2	2	House	20	30		Scatter		X	X	X	X	X	G
MAG76.0	mp	Pasture	2	2	House	0	0		Scatter		X	X	X	X	X	G
MAG77.0	mp	Pasture	2	2	House/Tomb	40	40		Scatter		N	N	N	N	N	G
MAG78.1	mp	Pasture	3	3	House	20	30		Scatter		B	B	B	B	N	X
MAG78.2	mp	Past/Bram	3	1	Necropolis	70	150		Scatter		B	G	G	B	N	X
MAG82.0	mp	Past/Oliv	3	3	House	35	35		Scatter		X	X	X	X	X	G
MAG83.1	mp	Pasture	2	1	Necropolis	100	100		Scatter		B	G	B	B	N	X
MAG84.0	gp	Stubble	2	2	House	15	15		Scatter		X	X	X	X	X	G
MAG85.0	gp	Pasture	3	2	House/Kiln	20	30		Scatter		X	X	X	X	X	N
MAG86.0	gp	Pasture	3	3	House	20	30		Scatter		X	X	X	X	X	G
MAG87.2	mp	Stubble	2	1	House/Tomb	0	0	UT 1 is Roman.	Scatter		B	B	B	B	N	N
MAG88.0	mp	Stubble	2	2	House	0	0		Scatter		X	X	X	X	X	G
MAG91.0		Vege/ Buil	0	0	Villa	0	0	Column capitals and drums; press base.	Scatter		X	X	X	X	X	N
MAG100.0	cl	Fallow	0	0	Necropolis	0	0	2 robbed chamber tombs (Minto 1935).	Struct.	Minto 1935	B	G	N	N	N	X
MAG101.0	cl	Macchia	0	0	Necropolis	0	0	La Piantatina; Il Piscolo: chamber tombs (Minto 1935)	Struct.	Minto 1935	G	G	B	B	N	X
MAG102.0	cl	Macchia	1	0	Necropolis	0	0	Dromoi visible in the macchia but not accessible.			B	G	N	N	N	X
MAG103.0	cl	Ploughed	0	0	Necropolis	50	50	S. Maria in Borracia; 9 tombs excavated by Soprintendenza.	Struct.	Minto 1935	B	G	N	N	N	X
MAG150.0	n	Pasture	3	0	Villa	50	50	Terrace and remains of wall.	Str&Sca		X	X	X	X	X	N
MAG152.2	mg	Past/ Wood	3	0	House/Tomb	0	0		Scatter		B	B	B	B	N	X

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAG153.0	ps	Plou/ Vine	4	1	House/Tomb	5	10		Scatter		X	X	X	X	X	N
MAG154.0			0	0	House/Kiln	0	0	Soprintendenza excavation.	Excav.		X	X	X	X	X	N
MAG160.2	mg	Past/Macc	2	1	House/Tomb	20	20		Scatter		N	G	G	B	N	N
MAG161.1	mg	Pasture	2	1	House/Kiln	15	15		Scatter		G	G	B	B	N	G
MAG161.2	mg	Pasture	2	1	House/Tomb	10	10		Scatter		N	N	N	N	N	X
MAG162.0	mg	Pasture	2	1	House	20	20		Scatter		B	G	G	B	N	X
MAG163.1	mg	Plou/Oliv	5	2	House/Tomb	20	20		Scatter		X	X	X	X	X	N
MAG164.0	mg	Stubble	1	1	House	0	0		Scatter		X	X	X	X	X	N
MAG165.0	mg	Vege/ Harr	2	1	House	15	10		Scatter		X	X	X	X	X	N
MAG200.0	cl	Macchia	0	0	Necropolis	0	0	Poggio Bacchino; chamber tombs (Minto 1935).	Struct.	Minto 1935	B	G	N	N	N	X
MAG201.0	cl	Ploughed	0	0	Necropolis	0	0	Le Ficaie; Fortullino; chamber tombs (Minto 1935); 4 still visible; 1 painted. =MAG20	Struct.	Minto 1935	B	G	N	N	N	X
MAG302.0	cl	Macchia	0	0	Necropolis	0	0	Robbed chamber tombs (=MAG 102).	Struct.		B	G	N	N	N	X

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAN1.0	aca	Stubble	2	1	House2	50	50		Scatter		X	X	X	X	X	G
MAN3.1	aca	Stubble	2	4	House2/ Kiln	30	30	Burnt stone; kiln bricks and wasters found.	Scatter		X	X	X	X	X	G
MAN7.0	p	Vines	3	1	House/Tomb	15	15		Scatter		X	X	X	X	X	N
MAN8.0	p	Ploughed	0	0	House	25	25		Scatter		X	X	X	X	X	G
MAN9.0	p	Ploughed	3	1	House/Tomb	5	5		Scatter		X	X	X	X	X	N
MAN10.0		Plou/Buil	4	3	Villa	100	100	Cryptoporticus in opus reticulatum.	Str&Sca		X	X	X	X	X	G
MAN51.0	cal	Pasture	2	0	House	20	20		Scatter		X	X	X	X	X	G
MAN53.1	tra	Vegetable	1	0	Villa	100	50	Informed of walls and columns.	Scatter		X	X	X	X	X	N
MAN54.2	tra	Plou/Past	2	0	House	60	60		Scatter		X	X	X	X	X	G
MAN54.4	tra	Ploughed	3	4	House	30	20	UT 1 is a Roman house/kiln; other UTs include a villa and a village.	Scatter		G	G	G	G	N	N
MAN54.5	tra	Ploughed	5	4	Villa	60	60	Squared blocks of travertine; press base found.	Scatter		X	X	X	X	X	G
MAN54.6	tra	Ploughed	5	1	Village	60	60		Scatter		X	X	X	X	X	N
MAN56.0		Vegetable	2	1	House	0	0		Scatter		X	X	X	X	X	N
MAN72.2	tra	Plou/ Wood	5	4	House/Tomb	70	70	UT 1 is a Roman villa/kiln with column drums.	Scatter		B	B	B	B	N	G
MAN73.0		Plou/Macc	4	3	House	30	50		Scatter		N	N	N	N	N	X
MAN74.1	tra	Plou/Past	2	1	House/Tomb	0	0		Scatter		X	X	X	X	X	N
MAN76.0	cal	Ploughed	5	4	Villa	80	100	Squared stone; mill stone; architectural fragments; road stones.	Scatter		X	X	X	X	X	G
MAN77.1	cal	Ploughed	0	0	House/Tomb	50	150	8 concentrations (5x5m) of scattered material.	Scatter		B	B	G	G	N	G
MAN79.2	cal	Ploughed	5	5	House	0	0	UT 1 is a Roman house/kiln.	Scatter		N	N	N	N	N	G
MAN81.0	cd	Ploughed	3	1	House/Tomb	10	10		Scatter		X	X	X	X	X	N
MAN82.0	cal	Ploughed	3	1	House/Tomb	10	10		Scatter		X	X	X	X	X	N
MAN83.0	arg	Pasture	2	1	House	30	30		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAN84.0	cal	Stubble	2	5	Villa	80	100	Squared blocks and columns found.	Scatter		X	X	X	X	G	G
MAN87.0	cal	Ploughed	5	5	House2/ Villa	80	120	Structure ?cistern found.	Str&Sca		X	X	X	X	G	G
MAN88.2	tra	Ploughed	5	5	House	40	40	Squared plan outlined by irregular aligned blocks of travertine. UT 3 is a Roman village.	Scatter		G	G	G	G	G	G
MAN88.7	tra	Ploughed	5	3	House	20	25		Scatter		G	G	G	G	G	X
MAN91.1	cal	Vines	3	1	House/Tomb	20	20		Scatter		X	X	X	X	X	N
MAN92.1	arg	Pasture	2	2	Scatter	20	20		Scatter		N	G	G	N	N	X
MAN93.0	all	Harr/ Macc	3	0	House	10	15		Scatter		B	B	B	B	N	X
MAN96.2	arg	Vineyard	0	0	House	10	20		Scatter		B	G	G	B	N	X
MAN97.0	qal	Fallow	2	0	Scatter	5	5				B	B	B	B	N	X
MAN98.0	cal	Ploughed	5	3	House	50	30		Scatter		X	X	X	X	X	G
MAN99.0	cal	Ploughed	5	4	Village/ Kiln	100	50	Lozenge tiles.	Scatter		X	X	X	X	N	G
MAN101.2	cal	Ploughed	5	3	House/Tomb	30	30		Scatter		B	G	G	G	G	X
MAN103.2	cal	Ploughed	5	5	House/Tomb	40	50	UT 1 is a Roman house2 with 2 press bases.	Scatter		B	B	G	G	N	G
MAN104.0	cal	Ploughed	5	4	House2	60	40		Scatter		X	X	X	X	X	G
MAN105.0	cal	Ploughed	5	2	House	25	50		Scatter		X	X	X	X	N	N
MAN106.0	cal	Ploughed	5	3	House	20	25		Scatter		X	X	X	X	X	N
MAN107.2	tra	Vines	2	2	House/Tomb	0	0	UT 1 is a Roman necropolis where 8 inscriptions were found.	Scatter		B	B	B	B	N	N
MAN108.0	tra	Plou/ Bram	5	5	Tomb	75	75	Inscribed stele.	Scatter		B	B	G	G	N	N
MAN109.0	tra	Past/ Wood	2	2	Villa	50	60	Walls; architectural fragments found.	Str&Sca		X	X	X	X	X	N
MAN110.2	tra	Fallow	2	1	House/Tomb	15	15	UT 1 is a Roman house.	Scatter		B	B	B	B	N	N
MAN111.0	tra	Ploughed	5	2	House	20	10		Scatter		X	X	X	X	X	N
MAN113.2	cal	Pasture	2	2	House	50	50	UT 1 is a Roman house/kiln.	Scatter		B	G	G	G	N	G
MAN115.1	cal	Ploughed	5	3	Scatter	20	25	Material found in UT 0; a Roman house.	Scatter		B	G	G	B	N	N
MAN116.0	cal	Ploughed	5	2	House	20	25		Scatter		X	X	X	X	X	G
MAN117.0	cal	Ploughed	5	3	House	20	70		Scatter		N	N	N	N	N	
MAN118.2	tra	Past/Macc	1	4	House/Tomb	50	50	UT 1 is a Roman villa and UT 3 is a Roman necropolis.	Scatter		B	B	B	B	N	G
MAN119.0	tra	Plou/Stub	5	3	House	20	20		Scatter		B	B	G	B	N	X
MAN121.2	cal	Ploughed	5	5	House/Tomb	50	60	UT 1 is a Roman house/kiln	Scatter		N	N	G	N	N	G
MAN150.3	tra	Ploughed	5	2	Tomb	100	200	UT 2 is a Roman villa with architectural fragments and UT 1 is a Roman village	Scatter		B	B	G	G	N	N
MAN151.0			5	2	House	35	50		Scatter		B	B	G	G	N	X
MAN152.2	cal	Ploughed	5	2	House/Tomb	4	4	UT 1 is a Roman house.	Scatter		B	B	B	B	N	G
MAN155.0	cal	Ploughed	5	4	House/Tomb	5	5		Scatter		X	X	X	X	X	N
MAN156.0	tra	Stubble	2	1	Village	50	100		Scatter		X	X	X	X	X	N
MAN157.0		Vines	1	4	House2	0	0		Scatter		X	X	X	X	X	G
MAN159.0	cal	Ploughed	5	3	House	10	10	Wasters; small grindstone	Scatter		B	B	B	B	N	X
MAN160.0	cal	Ploughed	0	0	House/Tomb	5	10		Scatter		X	X	X	X	X	N
MAN164.0	tra	Vines	0	0	Villa	0	0	Visible in air photo; fragments of column found.	Scatter		X	X	X	X	X	N
MAN200.1	tra	Past/Buil	5	0	Minor Centre	800	300	Saturnia. Excavations by Soprintendenza.	Struct.	Minto 1925; 593-624; Michelucci 1982; 16-48	N	N	G	G	G	G
MAN252.2	tra	Plou/Fall	4	2	House/Tomb	30	15	UT 1 is a villa with architectural fragments; press base at farm. Informed of cobbled road.	Scatter		G	G	G	G	G	G
MAN253.0	cal	Plou/ Wood	5	1	House	0	0		Scatter		X	X	X	X	N	G
MAN254.0	arg	Ploughed	5	2	House	35	15		Scatter		B	B	B	B	N	X
MAN255.0	cal	Ploughed	5	3	House	20	30		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAN256.0	cal	Past/Vege	3	2	House	20	30		Scatter		X	X	X	X	X	N
MAN257.0	cal	Ploughed	5	3	House	25	15		Scatter		N	N	N	N	N	X
MAN258.0	cal	Ploughed	5	1	Necropolis	40	30		Scatter		N	N	N	N	N	X
MAN260.0	arg	Ploughed	5	2	House	20	15		Scatter		N	G	G	G	G	X
MAN262.0	cal	Ploughed	5	4	House	25	35	Aligned stone.	Scatter		N	G	G	N	N	X
MAN263.0	cal	Harrowed	3	0	House/Tomb	10	15		Scatter		N	N	N	N	N	X
MAN266.0	tra	Ploughed	3	1	House	0	0	By a roman road.	Scatter		G	G	G	B	N	X
MAN269.0	mac	Ploughed	4	1	House/Tomb	10	10		Scatter		X	X	X	X	X	N
MAN271.2	mac	Ploughed	2	3	House/Tomb	20	25	UT 1 is a Roman house.	Scatter		B	G	G	B	N	N
MAN272.2	mac	Pasture	0	0	Village	35	75		Scatter		X	X	X	X	X	G
MAN273.0	cal	Ploughed	2	1	House	0	0		Scatter		X	X	X	X	N	G
MAN275.0	cal	Ploughed	5	4	House2	40	50	Press base at farm.	Scatter		X	X	X	X	X	G
MAN276.0	mac	Fallow	2	0	Kiln	30	30	Wasters and road stones; cistern; burnt earth and many tiles found.	Scatter		X	X	X	X	X	N
MAN300.3	a	Ploughed	5	1	Necropolis	30	10		Scatter		N	N	N	N	N	X
MAN301.0	a	Ploughed	5	1	Necropolis	10	10		Scatter		G	G	B	B	N	X
MAN302.2	a	Ploughed	5	1	House/Tomb	10	10	UT 1 is a Roman necropolis.	Scatter		N	N	N	N	N	N
MAN303.0	a	Ploughed	5	1	Tomb	5	5		Scatter		N	N	N	N	N	X
MAN304.0	a	Fallow	2	2	House	20	30		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAR1.0	csr	Plou/Buil	1	1	Necropolis	100	150	Cemetery excavated by Minto.	Bibliog	Minto 1921.	G	B	N	N	N	X
MAR2.2	mcg		0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	B	B	N	X
MAR4.0	mcg	Plou/Buil	5	5	Villa	100	150	Bassis villa built over by casale = Dyson 1978 60	Str&Sca		X	X	X	X	X	G
MAR5.0	mcg	Olives	2	3	Villa	40	80	Opus spicatum.	Scatter	Minto 1921. 13	X	X	X	X	N	G
MAR6.0	mcg	Plou/Oliv	2	1	House	10	10	Numerous sherds of amphorae. ? Dump.	Scatter		B	G	G	B	N	X
MAR8.0	mcg	Plou/Oliv	5	3	Tomb	3	3		Scatter		G	G	G	B	N	X
MAR9.0	mcg	Plou/Oliv	5	2	House/Tomb	100	70	Travertine blocks (1 squared)	Scatter		G	G	G	B	N	X
MAR10.0	csr	Plou/ Vege	4	2	Tomb	30	20	2 concentrations of pottery and river pebbles.	Scatter		G	G	G	B	N	X
MAR12.0	mcg	Macchia	1	0	Tomb	4	2	Chamber (3.6x2.5m.) tomb with small dromos built of blocks of limestone. Excavated.	Struct.	Minto 1921. 23-25; fig. 2; tav. V.2	G	G	N	N	N	X
MAR13.0	mcg	Macchia	1	2	Tomb	10	10	Robbed tumulus with central trench grave.	Struct.	Minto 1921; p. 26-7	G	N	N	N	N	X
MAR14.0	tr	Stubble	3	2	House/Tomb	20	20	Roman house with squared blocks; loom weights and dolia found.	Scatter		G	G	G	G	N	G
MAR15.0	csr	Ploughed	5	4	House	75	50	Squared blocks; loom weight and dolia.	Scatter		X	X	X	X	X	G
MAR16.0	mcg	Fallow	0	0	Necropolis	15	15	2 trench graves robbed. Informant: ivory; gold fibula; lead ingot and inscribed lead found.	Str&Sca		G	G	B	B	N	X
MAR17.0	csr	Ploughed	5	5	Villa	80	80	Cocciopesto; capitals; column bricks and informed of a marble head.	Scatter		X	X	X	X	N	G

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAR18.0	csr	Vineyard	4	1	Necropolis	50	30	Plain limestone sarcophagus lid or capstone for burial. Info. 'tombe a cassone' black figure and bucchero found.	Scatter		B	G	G	B	N	N
MAR19.0		Plou/Past	3	4	Scatter	150	100	UT 1 is a Roman villa with squared stone; bricks; column base; mosaic; plaster.	Scatter		N	N	N	N	N	G
MAR20.1	csr	Ploughed	5	1	Tomb	5	5	Leech fibula found in the past	Scatter	Minto 1921	G	G	B	B	N	X
MAR21.2	csr	Ploughed	3	4	Necropolis	0	0	Informed of miniature bucchero vases.	Scatter		G	G	G	G	N	X
MAR22.2	csr	Ploughed	5	4	Necropolis	30	30	Pithoi; 'olla a rete' found. UT 1 is a villa with opus spicatum; lozenge tiles; mill stone; UT 2 may be Roman = Dyson 1978 49.	Scatter	Dyson 1978	G	G	G	B	N	G
MAR25.0	csr	Past/Vine	3	3	Villa	150	130	Squared blocks; copper alloy casting waste; opus spicatum found = Dyson 1978 50.	Scatter	Dyson 1978	X	X	X	X	X	G
MAR27.0	csr	Vines	3	3	House2	30	40	Nail found.	Scatter		X	X	X	X	X	G
MAR30.0	csr	Ploughed	5	5	Villa	150	100	Column drums; travertine blocks found.	Scatter		X	X	X	X	N	G
MAR31.0	csr	Ploughed	2	2	Necropolis	10	30		Scatter		G	G	B	B	N	X
MAR32.0	csr	Ploughed	5	5	House2	30	40	Minto reports a nymphaeum.	Scatter	Minto 1921. 15	X	X	X	X	X	G
MAR34.1	csr	Ploughed	5	1	House/Tomb	5	5		Scatter		X	X	X	X	X	G
MAR35.2	csr	Ploughed	5	5	House/Tomb	30	30	Material found in UT 1 a Roman house2.	Scatter		B	B	B	B	N	G
MAR36.0	csr	Vines	3	1	House	10	10		Scatter		X	X	X	X	X	G
MAR37.0	csr	Ploughed	5	5	House	50	60	Pithoi found. Info. tombs nearby.	Scatter		G	G	G	G	G	G
MAR38.0	csr	Plou/Vine	3	3	House	30	40	Informed of tombs.	Scatter		X	X	X	X	X	G
MAR39.0	csr	Ploughed	5	2	Necropolis	20	30	Bucchero found by landowners.	Scatter		G	G	G	G	N	X
MAR40.1	csr	Plou/ Vege	3	5	Villa	60	70	Cistern; travertine blocks; opus spicatum; informed of mosaic.	Scatter	Minto 1921.15	X	X	X	X	X	G
MAR41.0	par	Ploughed	5	1	House/Tomb	10	10		Scatter		B	G	G	B	N	G
MAR42.0	pa	Ploughed	5	1	House/Tomb	30	30		Scatter		X	X	X	X	X	N
MAR43.0	csr	Ploughed	5	1	Necropolis	15	15		Scatter		B	B	B	B	N	G
MAR44.0	a	Plou/Vine	4	2	House/Tomb	20	30		Scatter		B	B	B	B	N	X
MAR45.2	mcg	Ploughed	5	1	House/Tomb	15	15		Scatter		B	G	G	B	N	X
MAR46.0		Plou/Vine	4	3	Villa	100	150	Squared blocks and plaster found.	Scatter		X	X	X	X	X	G
MAR48.0	csr	Plou/Fall	4	1	Necropolis	5	5		Scatter		B	B	G	B	N	X
MAR50.0		Stubble	3	4	Villa	70	70	Threshold and squared blocks of travertine; column fragments and mosaic found.	Scatter		X	X	X	X	X	G
MAR51.0	mcg	Stub/Oliv	4	2	Necropolis	5	5	Informed of tomb robbing in the area.	Scatter		N	N	N	N	N	X
MAR53.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	B	B	N	X
MAR57.0		Plou/Past	4	2	House2	30	30	Rectangular structure with 3 rooms visible on air photo.	Scatter		X	X	X	X	N	G
MAR59.0		Ploughed	5	2	Tomb	0	0		Scatter		X	X	X	X	X	G
MAR60.0		Stub/ Macc	3	0	Tomb	10	15	Earthen mound with large squared blocks of limestone.	Scatter		B	B	N	N	N	X
MAR61.0		Fallow	2	1	House	30	40	Structure with 6 rooms visible in air photo.	Scatter		X	X	X	X	X	G
MAR63.0		Stubble	2	4	Villa	75	75	Column bricks and column drum found.	Scatter		X	X	X	X	X	G
MAR64.0		Ploughed	5	3	Necropolis	30	6		Scatter		N	N	N	N	N	X
MAR65.0	pcg	Plou/Wood	4	3	Villa	50	100	Rectangular traces visible in air photo.	Scatter		X	X	X	X	X	G
MAR66.0	pcg	Vege/ Vine	4	1	House	110	90		Scatter		B	G	G	N	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAR67.0	pcg	Ploughed	5	1	House	30	20		Scatter		X	X	X	X	X	N
MAR68.0	csr	Woodland	1	2	House/Kiln	30	20	Rings of fired clay (spacers) found.	Scatter		X	X	X	X	X	N
MAR69.0	pcg	Ploughed	5	1	House	40	50		Scatter		X	X	X	X	X	N
MAR70.0	csr	Ploughed	5	2	Necropolis	40	50		Scatter		G	B	G	G	N	X
MAR71.0	pcg	Ploughed	5	1	House	20	30		Scatter		X	X	X	X	X	G
MAR75.0		Vegetable	2	2	Necropolis	10	30	Human bone found.	Scatter		N	B	B	B	N	X
MAR76.0	ar	Vines	4	1	House	50	80		Scatter		X	X	X	X	X	N
MAR78.0	csr	Plou/Vine	4	1	House	20	30		Scatter		X	X	X	X	N	N
MAR79.0	pcg	Ploughed	5	1	Scatter	15	25		Scatter		B	B	B	B	N	X
MAR80.1	tro	Ploughed	5	0	Scatter	30	50	UT 0 is a Roman house2.	Scatter		G	G	N	N	N	N
MAR81.0	mcg	Macchia	0	0	Tomb	20	20	Robbed tumulus (d. 20m.) Vaulted chamber with a loculus in the right wall. Dromos built of squared blocks of limestone.	Struct.		B	G	N	N	N	X
MAR82.0	mcg	Woodland	1	0	Tomb	10	10	Robbed tumulus (d. 5m.) of pebbles and earth.	Struct.		B	G	N	N	N	X
MAR83.0	mcg	Woodland	1	0	Tomb	5	5	Robbed tumulus (d. 4m. .1m. high) of stones and earth.	Scatter		B	G	N	N	N	X
MAR84.0	mcg	Stubble	3	2	Kiln	50	100	Squared stone; dry stone wall; opus spicatum; slag found.	Scatter		X	X	X	X	X	G
MAR85.0	mcg	Ploughed	5	1	Necropolis	30	30		Scatter		N	N	N	N	N	X
MAR86.0	pcg	Macchia	1	1	House	30	30	Informed of walls.	Scatter		N	N	N	N	N	X
MAR87.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		N	B	B	B	N	X
MAR88.0	mcg	Fallow	3	1	House	40	50		Scatter		G	G	G	G	N	X
MAR91.0	cv	Woodland	1	1	House	15	15	Cuts in the rock for ?foundations. Traces of walls.	Str&Sc a		G	G	G	G	N	X
MAR92.0	mcg	Woodland	1	1	Necropolis	15	15	1 chamber tomb. Other scatters with blocks of travertine.	Str&Sc a		B	G	N	N	N	X
MAR93.0	mcg	Woodland	1	0	Necropolis	15	15	3 tumuli (d.4, 4&5m.) with chambers built of blocks of limestone; 1 cruciform plan (3.5m. wide) with dromos. Robbed out.	Struct.		B	G	N	N	N	X
MAR94.0	mcg	Woodland	1	0	Necropolis	15	15	3 robbed tumuli (d. 5m.) with built chambers and possibly vaults.	Struct.		B	G	N	N	N	X
MAR96.0	csr	Woodland	1	0	Necropolis	15	15	2 robbed tumuli (d.5m.); 1 with chamber built of blocks of travertine. 1 with dromos to west; rectangular plan.	Struct.		B	G	N	N	N	X
MAR97.0	pcg	Ploughed	5	1	House2	60	50		Scatter		X	X	X	X	X	G
MAR98.0	pcg	Ploughed	5	2	House	25	25		Scatter		B	B	G	G	N	X
MAR99.0	pcg	Ploughed	5	2	House	50	60		Scatter		G	G	G	G	N	X
MAR101.0	csr	Stubble	3	2	House	60	35		Scatter		B	G	G	B	N	N
MAR103.0	csr	Ploughed	5	1	Tomb	5	5		Scatter		N	G	G	G	N	X
MAR104.0	csr	Ploughed	5	2	Tomb	5	5		Scatter		B	B	B	B	N	X
MAR105.0	mcg	Plou/ Macc	1	0	Necropolis	30	30	4 scatters; 1 with tumulus; signs of robbing revealed blocks of tufo.	Scatter		B	B	B	B	N	X
MAR106.0	csr	Stub/Vine	3	1	House/Tomb	15	15	Pithoi found.	Scatter		N	N	N	N	N	X
MAR108.0	mcg	Macchia	1	0	Tomb	5	5	Robbed tumulus. Blocks of limestone found.	Struct.		B	G	N	N	N	X
MAR110.0		Ploughed	5	2	Necropolis	5	15	Also a Roman house2.	Scatter		N	N	G	N	N	N
MAR111.0		Ploughed	5	2	House	70	70		Scatter		X	X	X	X	X	G
MAR112.0	a	Ploughed	5	3	Kiln	10	80	Pithoi and pottery found. Flecks of charcoal and green clay seen.	Scatter		N	N	N	N	N	X
MAR113.0	csr	Ploughed	3	3	Tomb	5	5	Semi-constructed chamber (2x4m.). Info. Bucchero found.	Scatter		N	G	N	N	N	X
MAR114.0		Ploughed	5	2	Necropolis	5	25		Scatter		N	N	N	N	N	X
MAR116.0		Ploughed	5	2	Tomb	5	5		Scatter		N	N	N	N	N	X
MAR117.0		Harrowed	5	2	House	25	25		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
MAR118.0		Stubble	2	3	House2	45	60	Opus spicatum; painted plaster found.	Scatter		X	X	X	X	X	G
MAR119.0		Ploughed	5	2	Tomb	2	2	1 fragment of bronze found.	Scatter		B	B	B	B	N	X
MAR120.0	csr	Ploughed	5	1	House	25	30		Scatter		X	X	X	X	X	N
MAR121.0		Harrowed	4	1	House	20	30		Scatter		X	X	X	X	X	N
MAR124.0		Ploughed	5	4	House2	35	40		Scatter		X	X	X	X	X	G
MAR125.0		Ploughed	5	2	Necropolis	8	30		Scatter		B	G	G	B	N	X
MAR127.0		Vegetable	3	2	Necropolis	7	20		Scatter		N	N	G	N	N	X
MAR129.0			0	0	Tomb	0	0				B	G	G	B	N	X
MAR130.0		Stubble	2	2	House	30	40		Scatter		X	X	X	X	X	G
MAR133.0		Ploughed	5	4	House2	50	50	Opus spicatum; lozenge tiles; press base and marble found.	Scatter		X	X	X	X	X	G
MAR150.1	csr	Ploughed	5	5	Village/Kiln	200	100		Scatter		X	X	X	X	X	G
MAR200.0	pcg	Ploughed	5	2	House	15	25		Scatter		X	X	X	X	X	G
MAR201.0	a	Vegetable	3	1	House2	50	30	Opus spicatum found.	Scatter		X	X	X	X	X	G
MAR202.0	csr	Ploughed	4	1	House	10	15	Pithoi found.	Scatter		B	B	B	B	N	X
MAR205.0	pcg	Ploughed	3	1	House2/Kiln	75	40		Scatter		X	X	X	X	X	G
MAR207.0	pcg	Stub/Vine	3	1	House2	30	30	Slag found.	Scatter		X	X	X	X	N	G
MAR208.1	pcg	Ploughed	5	1	House2/ Necropolis	5	5	Human bone found.	Scatter		X	X	X	X	G	G
MAR209.0	pcg	Ploughed	5	1	House/Tomb	10	10	? Pithoi found.	Scatter		G	G	B	B	N	X
MAR210.2	ps	Ploughed	5	2	House/Tomb	25	25	Material found in UT 1 - a Roman house2; burnt clay found; possibly a kiln.	Scatter		G	G	G	B	G	G
MAR212.0	ps	Ploughed	5	1	Tomb	5	5		Scatter		G	G	G	B	N	X
MAR213.0	pcg	Ploughed	5	2	Necropolis	40	40		Scatter		N	G	G	G	N	X
MAR214.0	pcg	Plou/Vine	4	1	House	15	15		Scatter		X	X	X	X	N	G
MAR215.0	pcg	Ploughed	5	1	House/Tomb	10	10		Scatter		B	B	B	B	N	X
MAR216.0	pcg	Ploughed	5	1	Necropolis	40	20		Scatter		N	G	G	G	G	X
MAR220.0	pa	Vege/ Vine	4	2	House2	35	35	Squared stone; opus spicatum; site visible in aerial photograph.	Scatter		X	X	X	X	N	G
MAR221.0	pa	Vege/ Stub	3	1	House	20	20	Pithoi found.	Scatter		B	B	B	B	N	X
MAR222.0	pcg	Plou/Wood	4	2	House	20	20	Pithoi found.	Scatter		B	G	G	G	N	X
MAR223.0	csr	Stubble	3	1	House/Tomb	15	10		Scatter		N	B	G	G	N	X
MAR224.0	tv	Stub/Vine	3	1	House	25	15	Informed of large tiles and a loom weight.	Scatter		B	B	B	B	N	X
MAR225.0	tv	Stubble	3	1	House	25	30		Scatter		B	G	G	G	N	X
MAR226.0	pa	Stubble	2	1	House	30	30	Pithoi found.	Scatter		B	B	B	B	N	G
MAR227.0	pcg	Vineyard	4	1	House/Tomb	30	30		Scatter		N	N	N	N	N	X
MAR228.0	csr	Stubble	2	1	House/Tomb	15	15		Scatter		B	G	G	G	N	X
MAR229.0	pcg	Stubble	3	1	House	25	25	Burnt tiles found.	Scatter		X	X	X	X	X	G
MAR230.2	tr	Past/Stub	3	1	House/Tomb	35	50	Material found in UT 1 - a Roman house/kiln with kiln bricks.	Scatter		N	N	N	N	N	G
MAR231.0	pa	Plou/Oliv	4	1	House/Tomb	50	30	Pithoi found.	Scatter		B	G	G	G	G	X
MAR233.0	mcg	Past/ Bram	3	1	House/Tomb	15	15		Scatter		B	G	G	B	N	X
MAR301.0	cl	Ploughed	4	1	Tomb	5	5		Scatter		N	N	N	N	N	X
MAR303.0	cl	Macchia	1	0	Necropolis	200	100	15 Chamber tombs (2x1.5m each) with single or double depositions.	Struct.	Minto 1935	B	G	N	N	N	X
MAR304.0	cl	Ploug/ Macc	5	1	Necropolis	0	0	Robbed trench tombs.	Scatter		B	G	N	N	N	X
MAR305.0	cl		0	0	Tomb	0	0	Partitioned chamber tomb	Struct.		B	G	N	N	N	X
MAR306.0	cl	Ploughed	0	0	Tomb	2	8	Robbed chamber tomb.	Struct.		G	G	N	N	N	X
MAR308.0	cl	Macchia	1	0	Tomb	2	2	Robbed chamber tomb.	Struct.		B	G	N	N	N	X
MAR309.0	cl	Ploughed	0	0	Necropolis	0	0	6 Chamber tombs being excavated by the Soprintendenza at Loc. Cancellone	Struct.	Rendini 1989. 483-4	N	G	N	N	N	X
MAR310.0	cl	Olives	0	0	Tomb	2	2	Painted chamber tomb.	Bibliog	Rendini 1989. 483-4	G	G	N	N	N	X
MOO1			0	0	House2	0	0				X	X	X	X	X	G

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
ORB2.0	cv	Macchia	5	0	Tomb	2	2	Built of opus incertum with 2 external wings.	Struct.		X	X	X	X	X	G
ORB6.0	cv	Macchia	5	0	Tomb	2	2	Built of opus incertum with 2 external wings.	Struct.		X	X	X	X	X	G
ORB7.0	cv	Macchia	5	0	Tomb	2	3	Built of opus ivcertum with 2 external wings.	Struct.		X	X	X	X	X	G
ORB11.0	tro	Ploughed	0	3	House	20	20		Scatter		X	X	X	X	X	G
ORB13.0	cv	Stub/Oliv	5	3	Villa	150	130	Le Colonne	Str&Sc a		X	X	X	X	X	G
ORB14.0	s	Stubble	2	2	House	40	40		Scatter		X	X	X	X	X	G
ORB15.0	s	Vege/Vin e	2	2	House	30	30		Scatter		X	X	X	X	X	G
ORB17.0	tro	Ploughed	4	5	House2	100	70		Scatter		X	X	X	X	N	G
ORB19.0		Ploughed	5	5	House	70	50	Informed of paving and lead pipes.	Scatter		X	X	X	X	X	G
ORB20.0	tro	Macchia	2	0	Necropolis	20	30	Traces of cuts in the rock and fragments of sandstone slabs. Informed of necropolis.	Struct.		N	N	N	N	N	X
ORB23.0	tro	Ploughed	5	5	Villa	100	100		Scatter		X	X	X	X	X	N
ORB26.0	tro	Buil/Mac c	2	1	House2	20	20		Scatter		X	X	X	X	X	N
ORB28.0	tro	Buil/Mac c	2	2	Villa	150	150	Remains of cryptoporticus and cistern beneath house.	Struct.		X	X	X	X	X	N
ORB29.0	s	Stubble	1	2	House	20	20		Scatter		X	X	X	X	X	G
ORB30.0	s	Plou/Stub	3	2	House2	50	50	Informed of dolia and lead pipes.	Scatter		X	X	X	X	X	G
ORB31.0	tro	Olives	4	3	Villa	40	40		Scatter		X	X	X	X	X	G
ORB33.0	tro	Ploughed	4	2	House	10	10		Scatter		X	X	X	X	X	N
ORB34.0	tro	Ploughed	4	2	House	20	20		Scatter		X	X	X	X	X	N
ORB35.0	tro	Ploughed	5	4	Necropolis	100	100	5 concentrations identified in the scatter.	Scatter		G	G	G	G	N	X
ORB36.0	tro	Vines	4	3	Villa	60	100	Soprintendenza excavations; cryptoporticus; baths; opus spicatum.	Str&Ex c		X	X	X	X	X	G
ORB37.0	tro	Ploughed	5	4	Dump/Wall	10	100	Ploughed out wall of large stones.	Scatter		X	X	X	X	X	G
ORB38.0	tro	Stubble	3	4	Villa	100	100		Scatter		X	X	X	X	X	G
ORB39.2			0	0	House/Tom b	0	0		Scatter		B	B	B	B	N	X
ORB40.0	tro	Ploughed	3	3	Necropolis	500	50		Scatter		G	G	G	G	N	X
ORB41.0	tro	Ploughed	3	3	Necropolis	100	100		Scatter		G	G	B	B	N	G
ORB46.0	tro	Ploughed	4	3	House	15	15		Scatter		X	X	X	X	X	N
ORB60.0	ar a	Vegetable	4	4	Villa	100	100	Vaulted rooms and re-used Roman material.	Str&Sc a		X	X	X	X	X	N
ORB61.0	tro	Built up	1	3	Villa	0	0	Dump of material where Levi found a Villa.	Bibliog	Levi 1927	X	X	X	X	X	G
ORB63.0	tro	Vines	5	5	Dump?	50	50		Scatter		X	X	X	X	X	G
ORB67.0	s	Woodland	4	5	House	15	15	A distinct scatter within 65.	Scatter		N	N	N	N	N	X
ORB68.0	s	Woodland	4	5	Port	100	100	Amphora dumps; walls; vaults; cemented amphorae.	Str&Sc a		X	X	X	X	N	G
ORB69.0	s	Woodland	3	5	Villa	50	50		Str&Sc a		X	X	X	X	N	G
ORB70.0	q m	Ploughed	5	4	House2	40	80	Lead pipe found; = Dyson 1978 125	Scatter	Dyson 1978, 125	X	X	X	X	X	G
ORB72.0	s	Built up	4	0	Necropolis	15	40	Tombs discovered during excavation of foundations for the Orbetello CO-OP. Visible in section.	Struct.		G	G	B	B	N	X
ORB73.0			0	0	House	0	0				X	X	X	X	X	N
ORB75.0			0	0	House	0	0				X	X	X	X	X	G
ORB76.0			0	0	House	0	0				X	X	X	X	X	N
ORB83.0			0	0	Villa	0	0				X	X	X	X	X	N
ORB89.0			0	0	Tomb	0	0				X	X	X	X	X	G
ORB90.0			0	0	Tomb	0	0				X	X	X	X	X	G
ORB91.0			0	0	Necropolis	0	0				X	X	X	X	X	G

ORB100.0	cv	Macchia	2	2	Tomb	5	5			Scatter		B	B	B	B	N	X
ORB101.0	cv	Pasture	3	1	House	50	50			Scatter		B	B	B	B	N	X
ORB102.0	cv	Ploughed	4	3	Necropolis	40	15			Scatter		B	B	B	B	N	X
ORB103.0	cv	Fallow	3	3	Necropolis	60	60			Scatter		B	G	G	G	N	X
ORB104.0	cv	Pasture	3	2	Village	60	40			Scatter		N	N	N	N	N	X
ORB106.2	tro	Fall/Vine	0	0	House/Tomb	0	0			Scatter		B	G	B	B	N	X
ORB107.0	tro	Harr/Macc	3	3	Village	60	50			Scatter		G	G	G	G	N	X
ORB108.0	cv	Ploughed	4	3	House	10	20			Scatter		G	G	G	G	N	X
ORB109.0	tro	Fallow	3	1	Scatter	200	200			Scatter		G	G	G	B	N	X
ORB111.0	tro	Macchia	4	0	Wall	0	0			Struct.		X	X	X	X	N	N
ORB112.1	tro	Past/Orch	3	4	House/Tomb	50	70			Scatter		N	N	N	N	N	X
ORB112.2	tro	Orch/Fall	0	0	House	20	20			Scatter		B	G	G	B	N	X
ORB113.1	tro	Orch/Fall	3	2	Necropolis	20	40			Scatter		B	B	B	B	N	X
ORB114.0	tro	Orch/Fall	4	4	House2	30	30			Scatter		X	X	X	X	X	N
ORB115.0	s	Built up	4	2	Villa	60	60			Struct.		X	X	X	X	X	G
ORB116.2	s	Built up	0	0	Necropolis	0	0	= Bronson 81; UT 1 is a Roman Villa.		Bibliog	Bronson and Uggeri 1970	N	N	N	N	N	N
ORB117.0		Built up	0	0	Necropolis	0	0	Briletto cemetery.		Bibliog		N	G	G	G	N	X
ORB118.0	s	Built up	0	0	Necropolis	0	0	Cristo cemetery.		Bibliog		N	N	N	G	N	X
ORB119.0		Built up	0	0	Necropolis	0	0	Cimetero cemetery		Bibliog		N	G	N	N	N	X
ORB120.0		Built up	0	0	Necropolis	0	0	Sale cemetery.		Bibliog		N	G	N	G	N	X
ORB121.0		Built up	0	0	Scatter	0	0	= Bronson 84 Probably a cemetery of Orbetello.		Scatter	Bronson and Uggeri 1970, 84	N	G	N	N	N	X
ORB122.0		Built up	0	0	Minor Centre	1700	100	Orbetello; ?Port		Bibliog		N	G	G	G	G	G
ORB133.0		Woodland	2	3	Dump	0	0		Bibliog	Bronson and Uggeri 1970, 100		X	X	X	X	X	N
ORB134.0		Woodland	2	3	Villa?	0	0		Bibliog	Bronson and Uggeri 1970, 101		X	X	X	X	X	G
ORB135.0		Woodland	2	3	Villa?	0	0		Bibliog	Bronson and Uggeri 1970, 102		X	X	X	X	X	G
ORB137.0	s	Beach	0	0	Port	0	0	Portus Cosanus (Mc Cann 1987)	Scatter			X	X	X	X	G	G
ORB200	tro	Ploughed	4	3	House	10	10			Scatter		X	X	X	X	X	N
ORB204.0	tro	Ploughed	4	2	House	20	10			Scatter		X	X	X	X	X	N
ORB206	tro	Stubble	3	2	House	30	20			Scatter		X	X	X	X	X	N
ORB207.0	tro	Macchia	4	0	Wall	2	150	Dry stone wall with large blocks		Struct.		X	X	X	X	X	N
ORB208.0	tro	Ploughed	4	3	House	20	20	?=Dyson 1978 10		Scatter	?Dyson 1978 10	X	X	X	X	X	N
ORB209.0	tro	Ploughed	4	3	House	10	10			Scatter		X	X	X	X	X	N
ORB210.0	tro	Stubble	2	3	House	30	30			Scatter		X	X	X	X	X	N
ORB212.0	tro	Ploughed	4	2	House	20	20			Scatter		X	X	X	X	X	N
ORB213.0	tro	Ploughed	4	2	House	10	10			Scatter		X	X	X	X	X	N
ORB214.0	tro	Ploughed	5	3	House	20	20			Scatter		X	X	X	X	N	N
ORB216.0	tro	Ploughed	5	3	House	15	10			Scatter		X	X	X	X	X	N
ORB218.0	cv	Buil/Oliv	5	0	Scatter	125	200	Villa at Settefinestre; sporadic Etruscan material found.		Str&Sca	Carandini 1985b	N	G	N	N	N	X
ORB220.0	s	Brambles	5	5	Dump	20	20			Scatter		X	X	X	X	X	G
ORB223.1	mcg	Wood/Bram	5	1	Scatter	0	0			Scatter		G	G	N	N	N	X
ORB224.0	cv	Macchia	2	0	Terracing	5	20	Remains of terrace wall around Poggio Malabarba.		Struct.		X	X	X	X	X	N
ORB230.0			0	0	House	0	0					X	X	X	X	X	G
ORB232.0			0	0	Sporadic	0	0					X	X	X	X	X	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
PE0.0		Macchia	0	0	City	1300	100	Cosa	Str&Sca	Brown 1980	X	X	X	X	G	G

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
PF1.3	p	Ploughed	5	5	House/Tomb	50	25	UT 1 and 3 are Roman kilns.	Scatter		G	G	B	B	G	G
PF3.2	p	Ploughed	5	5	House/Tomb	100	100	UT 1 is a Roman villa.	Scatter		B	G	G	N	G	G
PF5.0	a3	Pasture	2	1	House	30	30		Scatter		X	X	X	X	X	N
PF6.0	p	Vegetable	2	1	Necropolis	0	0		Scatter		B	B	B	B	N	X
PF7.0	a3	Vegetable	2	1	Necropolis	50	50		Scatter		G	G	G	B	N	X
PF8.0	a3	Vegetable	2	1	Necropolis	50	50	Also Roman tomb?	Scatter		B	B	B	B	N	N
PF9.2	a1	Ploughed	4	3	House/Tomb	50	50	Also Roman tombs.	Scatter		N	B	B	B	G	G
PF10.0	p	Vegetable	2	2	House	20	20		Scatter		X	X	X	X	X	N
PF12.0	t	Pasture	3	3	Necropolis	5	20		Scatter		N	N	N	N	N	X
PF13.0	t	Pasture	2	2	House	35	30		Scatter		B	B	B	B	N	X
PF14.0	m	Macchia	4	2	Tomb	2	2		Struct.		G	G	G	B	N	X
PF16.2	t	Past/Vine	2	3	House/Tomb	30	30	UT 1 is a Roman house2.	Scatter		G	G	B	B	N	G
PF17.1	t	Harrowed	2	3	House	30	30		Scatter		G	G	G	G	N	X
PF17.2	t	Harrowed	2	3	Tomb	15	10		Scatter		B	B	G	G	G	X
PF20.2	a2	Plou/Past	2	2	House/Tomb	30	30	UT 1 is a Roman house.	Scatter		B	G	B	B	N	N
PF22.0	t	Ploughed	4	2	Tomb	5	5		Scatter		G	G	G	G	N	X
PF23.0	t	Past/ Macc	2	2	Tomb	10	5		Scatter		B	B	G	G	G	X
PF24.0	t	Ploughed	2	2	Tomb	5	5		Scatter		B	B	B	B	N	N
PF25.0	t	Pasture	2	3	House	20	20		Scatter		G	G	G	G	N	X
PF26.2	t	Pasture	2	2	House/Tomb	15	15		Scatter		B	G	G	B	N	N
PF28.0	mcg	Pasture	2	2	House	30	10		Scatter		N	N	N	N	N	X
PF29.0	t	Olives	1	1	House/Tomb	10	20		Scatter		N	N	N	N	N	X
PF2.0	p	Ploughed	5	5	Necropolis	50	50		Scatter		X	X	X	X	X	G
PF30.0	p	Ploughed	2	1	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PF31.0			0	0	Tomb	0	0	Also Roman.	Scatter		G	G	G	B	N	N
PF33.0	mc	Ploughed	4	3	House/Tomb	15	20		Scatter		X	X	X	X	N	G
PF34.0	p	Ploughed	4	4	Village	100	100		Scatter		X	X	X	X	X	G
PF36.0	a1	Stub/Vine	2	2	House/Tomb	15	15		Scatter		B	B	B	B	N	X
PF38.0	a1	Ploughed	4	1	House	0	0		Scatter		X	X	X	X	X	G
PF39.0	a1	Harr/Oliv	3	2	House/Tomb	10	10		Scatter		N	N	N	N	N	X
PF41.0			0	0	House/Tomb	0	0		Info		N	N	N	N	N	X
PF100.1	a1	Past/Stub	3	3	House	10	20		Scatter		X	X	X	X	X	G
PF100.2	a1	Plou/Past	3	3	House/Tomb	0	0		Scatter		X	X	X	X	X	N
PF101.1	t	Past/ Macc	4	2	Necropolis	0	0		Scatter		N	N	N	N	N	X
PF101.2	t	Past/ Macc	1	1	House	10	10		Scatter		B	B	B	B	N	X
PF102.3	t	Pasture	2	1	Necropolis	0	0	UT 1 and 2 are Roman house/tomb.	Scatter		G	G	G	B	N	X
PF104.0	a1	Pasture	3	3	House	10	15		Scatter		N	N	N	N	N	X
PF105.1	a1	Plou/Vine	4	3	House	30	25		Scatter		G	G	B	B	N	X
PF105.2	a1	Plou/Vine	4	3	House/Tomb	30	25	UT 1 is a Roman house.	Scatter		B	B	B	B	N	G
PF106.0	a1	Ploughed	4	3	House	20	20		Scatter		B	B	B	B	N	N
PF107.1	a1	Plou/ Vege	4	2	Necropolis	0	0		Scatter		B	B	B	B	N	X
PF107.2	a1	Plou/ Vege	4	3	House	25	10		Scatter		N	N	N	N	N	X
PF108.0	a1	Plou/Past	3	1	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PF109.0	mcg	Pasture	3	1	House/Tomb	0	0		Scatter		B	B	B	B	N	X
PF111.0	mcg	Pasture	3	2	House/Tomb	0	0		Scatter		X	X	X	X	X	N
PF115.0	a1	Harrowed	3	2	Tomb	3	2		Scatter		N	N	N	N	N	X
PF117.0	a1	Plou/Stub	3	3	Necropolis	30	25		Scatter		N	B	G	G	N	X
PF118.1	a1	Ploughed	5	5	Villa	70	70		Scatter		X	X	X	X	X	G
PF118.2	a1	Ploughed	5	5	Village	70	50		Scatter		X	X	X	X	X	N
PF119.1	a1	Ploughed	5	5	Tomb	5	5		Scatter		N	N	N	N	N	X
PF119.2	a1	Ploughed	5	2	Tomb	0	0		Scatter		N	N	N	N	N	X
PF119.3	a1	Ploughed	5	1	Necropolis	0	0		Scatter		N	N	N	N	N	X
PF11.0	a1	Vegetable	2	3	House2	30	30		Scatter		X	X	X	X	X	G
PF120.0	a1	Plou/Harr	4	3	House	30	30		Scatter		B	B	B	B	N	X
PF121.2	p	Past/Harr	3	2	House/Tomb	30	15	Also Roman.	Scatter		B	G	G	G	G	N
PF122.0	t	Pasture	2	3	House2	30	30		Scatter		X	X	X	X	X	N
PF123.1	t	Pasture	3	2	House/Tomb	0	0		Scatter		X	X	X	X	X	N
PF123.2	t	Pasture	3	2	Necropolis	0	0		Scatter		X	X	X	X	X	N
PF124.0	t	Bram/ Buil	1	1	House	0	0		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	ID	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
PR1.0	a1	Plou/Buil	5	5	Statio	200	300	Ad Nonas; also medieval church.	Scatter		X	X	X	X	X	G
PR3.0	a1	Pasture	3	3	House/Tomb	15	20		Scatter		N	N	N	N	N	X
PR4.0	q	Ploughed	5	2	House/Tomb	500	250		Scatter		N	N	N	N	N	N
PR5.0	a1	Ploughed	5	3	Tomb	15	10		Scatter		N	N	N	N	N	X
PR7.2	a1	Ploughed	5	5	House/Tomb	100	100	UT 1 is a Roman villa; with road stone; opus reticulatum; glass; marble. = Dyson 1978 90	Scatter	Dyson 1978	B	B	B	B	N	G
PR8.0	a1	Ploughed	5	0	Road	0	0	Soil mark and stones of Via Aurelia Vetus	Scatter		X	X	X	X	X	G
PR9.0	a1	Ploughed	5	5	Village	400	100		Scatter		G	G	G	G	G	X
PR10.0	a1	Vegetable	4	4	Village	30	40		Scatter		G	G	G	G	N	X
PR11.2	a1	Pasture	2	0	Cuniculi	0	0		Scatter		N	N	N	N	N	N
PR12.1	a1	Ploughed	5	2	Tomb	10	10		Scatter		N	N	N	N	N	X
PR12.2	a1	Ploughed	5	2	Tomb	0	0	Tomb no longer visible on the next hill.	Scatter	Santangelo 1954	N	N	N	N	N	X
PR13.0	a1	Plou/Harr	4	1	House/Tomb	0	0		Scatter		N	B	B	B	G	N
PR14.0	a1	Ploughed	5	2	Tomb	10	10		Scatter		B	B	B	G	G	X
PR15.0	a1	Harrowed	4	2	Tomb	5	5		Scatter		B	B	B	B	N	X
PR16.0	q	Plou/Past	4	4	House2	35	20		Scatter		X	X	X	X	X	G
PR17.0	a1	Plou/Harr	4	1	House/Tomb	0	0		Scatter		B	B	B	B	N	X
PR18.1	q	Plou/Harr	5	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR19.2	q	Plou/Vine	4	2	House/Tomb	20	20		Scatter		B	B	G	G	N	G
PR20.0	q	Ploughed	5	2	Tomb	5	5		Scatter		N	N	N	N	N	X
PR21.0	q	Ploughed	5	2	House/Tomb	10	10		Scatter		N	N	N	N	N	X
PR22.0	q	Plou/Vege	4	2	Necropolis	0	0	Drainage channel found by landowner.	Scatter		N	N	N	N	N	N
PR23.2			0	0	House/Tomb	0	0		Scatter		G	G	G	G	N	X
PR24.0	a1	Plou/Vine	5	5	Village	80	30		Scatter		G	G	G	G	N	X
PR25.0	a3	Plou/Vege	5	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR26.2	a3		0	0	Road?	0	0	Archaic precursor of the Via Aurelia?	Scatter		B	B	B	B	N	X
PR27.1	q	Plou/Oliv	4	4	Village	50	30	UT 2 is a Roman house2.	Scatter		B	G	G	G	B	N
PR28.0	a1	Pasture	2	1	Villa?	0	0		Scatter		X	X	X	X	X	N
PR29.0	q	Past/Oliv	3	0	Cuniculi	0	0		Struct.		N	N	N	N	N	X
PR30.0	q	Brambles	1	3	Bridge	0	0	Bridge of the Via Aurelia Vetus over the Chiarone.	Struct.		X	X	X	X	X	G
PR32.1	a3	Ploughed	3	3	House/Tomb	5	5		Scatter		B	G	G	B	N	X
PR35.0	a1	Stubble	4	3	House/Tomb	10	10		Scatter		N	N	N	N	N	X
PR36.0	q	Ploughed	5	5	Villa	100	100		Scatter		X	X	X	X	X	G
PR37.0	q	Ploughed	5	3	Tomb	5	5		Scatter		N	N	N	N	N	X
PR38.0	a1s	Vegetable	4	3	House	20	20		Scatter		G	G	G	B	N	X
PR39.0	a3	Ploughed	5	4	Necropolis	20	20		Scatter		N	G	N	N	N	X
PR40.0	a3	Ploughed	5	2	Necropolis	0	0		Scatter		B	G	G	B	N	X
PR41.0	a3		5	1	House	0	0	Possibly a port; also a Roman house/tomb.	Scatter		G	G	B	B	N	N
PR42.1	a3	Ploughed	5	2	Tomb	10	5		Scatter		N	N	N	N	N	X
PR42.2	a3	Ploughed	5	2	Tomb	5	5		Scatter		N	N	N	N	N	X
PR43.2	a3	Stubble	3	2	House/Tomb	0	0	UT 1 is a Roman house.	Scatter		G	G	B	B	N	N
PR44.0	a3	Stubble	3	2	House	20	10		Scatter		X	X	X	X	X	N
PR45.0	a1s		0	0	Necropolis	0	0		Scatter		N	N	N	N	N	X
PR46.2			0	0	House/Tomb	0	0		Scatter		B	B	G	B	N	X
PR47.0	qts	Harrowed	4	2	Tomb	10	10		Scatter		N	N	N	N	N	X
PR48.0	qts	Ploughed	4	3	House	15	15		Scatter		G	G	G	G	N	X
PR49.0	qts	Ploughed	5	3	Tomb	5	5		Scatter		B	G	G	G	N	X
PR50.0	qts	Vege/Harr	4	4	Tomb	15	15		Scatter		G	G	G	G	N	N
PR51.0	qts	Vegetable	2	0	Cuniculi	0	0	Information from landowner.	Info		N	N	N	N	N	N
PR52.2	qts	Harrowed	4	3	House/Tomb	20	25	UT 1 is a Roman house. Landowner informed of cuniculi.	Scatter		B	G	G	G	N	G
PR53.0	qts	Vegetable	4	2	Tomb	0	0		Scatter		B	G	B	B	N	X
PR54.0	qts	Ploughed	5	3	Tomb	5	5		Scatter		N	G	G	G	N	X
PR55.0	qts	Vegetable	4	3	House	15	15		Scatter		N	N	N	N	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
PR56.0	a3	Ploughed	5	3	House/Tomb	10	10		Scatter		G	G	G	G	N	X
PR57.0	qt	Ploughed	5	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR58.0	qt	Plou/Past	4	5	Village	100	120		Scatter		X	X	X	X	X	G
PR59.1	qt	Ploughed	5	3	Necropolis	0	0	UT 2 is a Roman necropolis.	Scatter		G	G	G	G	N	N
PR60.1	qt	Ploughed	5	3	Necropolis	20	20	UT 2 is a Roman house/tomb.	Scatter		B	G	G	G	G	X
PR61.1	qt	Ploughed	5	2	House/Tomb	0	0		Scatter		B	G	G	G	G	X
PR62.0	qt	Ploughed	5	2	Tomb	0	0		Scatter		N	N	N	N	N	X
PR63.0	a3	Ploughed	5	2	Tomb	0	0		Scatter		N	N	N	N	N	X
PR64.0	qt	Oliv/Vine	4	3	Tomb	0	0		Scatter		N	N	N	N	N	X
PR65.0	qts	Pasture	4	4	Tomb	10	10		Scatter		N	N	N	N	N	X
PR66.0	qt	Pasture	4	3	House	20	15		Scatter		N	N	N	N	N	X
PR67.0	qt	Pasture	4	3	House	20	20		Scatter		N	N	N	N	N	X
PR68.0	qt	Vineyard	4	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR69.0	qts	Ploughed	4	2	Necropolis	0	0		Scatter		N	N	N	N	N	X
PR70.1	a3	Past/Vege	4	3	House/Tomb	30	20	UT 2 is a Roman house.	Scatter		N	N	N	N	N	N
PR71.0	a3	Past/Vege	4	3	Village	0	0		Scatter		X	X	X	X	X	G
PR72.0	qt	Plou/Harr	4	3	House	30	30		Scatter		X	X	X	X	N	N
PR73.0	qt	Plou/Past	4	1	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR74.0	a1	Plou/Past	4	1	House/Tomb	0	0		Scatter		G	G	B	B	N	X
PR75.0	qts	Ploughed	5	4	Tomb	10	10		Scatter		B	G	G	G	N	X
PR76.1	qts	Vege/ Stub	4	3	House	15	25		Scatter		B	G	G	G	N	X
PR76.2	qts	Vege/ Stub	4	3	Necropolis	10	0		Scatter		B	G	G	G	N	X
PR77.1	a3	Ploughed	5	1	House/Tomb	0	0		Scatter		G	G	G	G	N	X
PR78.0	qts	Vegetable	4	1	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PR79.0	qts	Past/Vine	4	3	Necropolis	20	15		Scatter		N	N	N	N	N	X
PR80.2	qts	Vege/ Stub	3	0	House/Tomb	200	150	UT 1 is a Roman ?village.	Scatter		B	B	B	B	N	N
PR82.2	qts	Vegetable	5	5	House/Tomb	100	100	UT 1 is a Roman village = Dyson 1978 75.	Scatter	Dyson 1978	B	B	B	B	N	G
PR84.1	a3	Ploughed	5	2	House/Tomb	0	0		Scatter		N	N	N	N	N	X
PS5.0	s		0	0	House	0	0	Bronson 72-3	Bibliog	Bronson and Uggeri 1970	X	X	X	X	X	N
PS7.0	s		0	0	Villa	0	0	Bronson 75	Bibliog	Bronson and Uggeri 1970	X	X	X	X	X	N
PS10.0	s		0	0	House	0	0	Bronson 78	Bibliog	Bronson and Uggeri 1970	X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SAM3.3			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	B	B	N	X
SAM4.0	tr	Vineyard	2	3	Necropolis	20	20		Scatter		N	N	N	N	N	X
SAM5.0	tr	Ploughed	5	0	House2	20	30		Scatter		X	X	X	X	X	N
SAM6.2	tr	Macchia	5	0	Necropolis	0	0	Sede di Carlo and Sterpeti cemetery. Loculus cut by roman road.	Biblio g	Minto 1925. 630-662	G	G	G	G	G	G
SAM7.0	ps	Plou/Oliv	3	1	House	10	15		Scatter		X	X	X	X	X	N
SAM8.0	tra	Ploughed	5	4	House2	45	20	Lozenge tiles and opus spicatum.	Scatter		X	X	X	X	X	G
SAM9.0	ps	Ploughed	5	1	House2	20	20		Scatter		X	X	X	X	X	G
SAM11.0	mc	Ploughed	5	3	House	20	50		Scatter		X	X	X	X	X	G
SAM12.0	mc	Fallow	1	1	House	20	40		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SAM17.0	tra	Plou/Oliv	3	2	Village	70	40		Scatter		B	G	G	B	N	X
SAM21.3	pa	Ploughed	5	3	Tomb	100	150	UT 1 is a Roman house2 and UT 2 is a Roman Necropolis	Scatter		B	B	B	B	N	G
SAM21.4	pa	Ploughed	5	0	Terracing	20	60		Struct.		N	N	N	N	N	X
SAM22.1	tra	Ploughed	5	3	Village	180	100	Associated with SAM 135; 129 and 127.	Scatter		B	G	G	G	N	X
SAM23.2	pa	Ploughed	5	3	House	35	40	Material found in UT 1 a Roman house.	Scatter		G	B	B	B	N	N
SAM25.1	pa	Ploughed	5	2	Village	120	100		Scatter		X	X	X	X	N	G
SAM26.0	ca l	Ploughed	5	1	House	10	15		Scatter		B	B	B	B	N	X
SAM27.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	B	B	N	X
SAM28.2	ac	Ploughed	5	3	House/Tomb	40	50	Material found in UT 1 - a Roman house/kiln.	Scatter		B	B	B	B	N	G
SAM29.3			0	0	House	0	0	Material found in UT 1.	Scatter		B	B	G	G	N	X
SAM31.3	ps	Ploughed	5	0	House/Tomb	10	20	Material found in UT 1 a Roman house.	Scatter		B	B	B	B	N	G
SAM32.0	ps	Ploughed	5	3	House	20	20		Scatter		X	X	X	X	X	G
SAM33.0	ps	Pasture	2	2	House	20	20		Scatter		X	X	X	X	X	G
SAM34.2	ps	Oliv/Vine	2	2	House/Tomb	0	0		Scatter		X	X	X	X	X	G
SAM36.0	ps	Ploughed	5	3	House	25	10		Scatter		X	X	X	X	N	G
SAM37.0	ps	Plou/Oliv	2	2	House	15	15		Scatter		X	X	X	X	X	G
SAM38.0	ps	Olives	3	2	House	10	10		Scatter		X	X	X	X	X	G
SAM40.0	ps	Olives	2	2	House	25	10		Scatter		X	X	X	X	X	G
SAM41.1	tr	Plou/Oliv	4	3	House	50	60		Scatter		B	B	G	G	N	X
SAM42.0	tr	Ploughed	5	5	Villa	120	100	Travertine veneer; cocciopesto and paving found.	Scatter		X	X	X	X	X	G
SAM43.0	ps	Ploughed	5	2	Kiln	20	10	Kiln bricks found.	Scatter		X	X	X	X	X	N
SAM44.0	tr	Ploughed	5	2	House	20	10		Scatter		X	X	X	X	X	N
SAM45.1	tr	Plou/ Wood	5	4	Villa	100	120		Scatter		X	X	X	X	N	G
SAM46.2			0	0	Necropolis	0	0	4 Tumuli at Pratogrande	Struct?	Minto 1925. 664-674	G	G	G	N	N	X
SAM47.0	tr	Ploughed	5	4	Scatter	20	15	UT 2 is a Roman house.	Scatter		B	B	B	B	N	G
SAM48.2	tr	Ploughed	5	3	House/Tomb	30	50	Material found in UT 1 a Roman house2 with road stones.	Scatter		B	B	G	G	N	G
SAM50.0	tr	Plou/Past	5	3	Villa/Kiln	90	110	Squared stone found.	Scatter		X	X	X	X	X	G
SAM51.3	tr	Ploughed	5	3	House/Tomb	200	100	Material found in UT 1 a Roman village.	Scatter		G	G	N	N	N	G
SAM52.1	tr	Plou/Past	5	2	Necropolis	100	100	Puntone cemetery.	Scatter	Michelucci 1982.	G	G	G	N	N	X
SAM52.2			0	0	Necropolis	0	0	Chamber tombs. Campo delle Caldane	Struct.	Minto 1925. 674-662	G	G	G	N	N	X
SAM54.3	ac	Past/Vine	2	2	Necropolis	25	30	Informed of tombs 'alla cappuchina' with 'black' pottery.	Scatter		N	N	N	N	N	X
SAM101.2	ac	Ploughed	5	4	House/Tomb	20	15	Material found in UT 1 - a Roman house with squared stones.	Scatter		B	G	G	G	N	N
SAM102.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	G	G	G	N	X
SAM104.0	ac	Ploughed	5	5	House2	20	25		Scatter		X	X	X	X	N	N
SAM106.2	ac	Ploughed	5	4	House/Tomb	50	20	Material found in UT 1 - a Roman house2.	Scatter		G	G	G	G	N	G
SAM107.0	ac		0	4	House	0	0		Scatter		B	B	B	B	N	X
SAM108.0	ac	Ploughed	4	3	House/Tomb	10	4		Scatter		X	X	X	X	X	N
SAM109.2	ac	Plou/Past	3	4	House/Tomb	20	20	Material found in UT 1 - a Roman house.	Scatter		N	N	N	N	N	N
SAM110.0	ac	Pasture	3	3	Scatter	10	10		Scatter		B	B	B	B	N	N
SAM111.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	B	B	N	X
SAM112.0	ar g	Ploughed	2	2	House	20	5		Scatter		N	N	N	N	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SAM113.3	arg	Stubble	3	3	House/Tomb	50	30	Material found in UT 1 - a Roman house/tomb.	Scatter		N	N	G	G	N	G
SAM114.0	arg	Plou/Vine	2	2	House/Tomb	20	5		Scatter		X	X	X	X	X	N
SAM115.3	arg	Ploughed	4	4	House/Tomb	30	10	Material found in UT 1 - a Roman house.	Scatter		B	B	B	B	N	N
SAM116.2	sc	Pasture	3	4	House/Tomb	60	50	Material found in UT 1 - a Roman house2 with lozenge tiles.	Scatter		G	G	B	B	N	N
SAM119.3	ps	Pasture	3	4	House/Tomb	30	15	UT 1 is a Roman house2.	Scatter		B	G	G	G	G	G
SAM121.0	psg	Ploughed	4	3	House	15	10		Scatter		X	X	X	X	N	G
SAM123.0	ps	Stubble	3	4	House2	35	10		Scatter		X	X	X	X	X	N
SAM124.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		G	G	G	G	N	X
SAM125.2	ps	Past/Harr	3	3	House/Tomb	15	10	UT 1 is a Roman house.	Scatter		B	B	B	B	N	N
SAM127.0	tr	Plou/Macc	4	4	Village	100	200	Many Pithoi found.	Scatter		B	B	G	G	G	G
SAM128.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		B	B	G	G	N	X
SAM130.1	tr	Ploughed	4	3	Tomb	5	5		Scatter		N	N	N	N	N	X
SAM130.2	tr	Ploughed	4	3	House/Tomb	0	0	Material found in UT 1.	Scatter		G	G	G	B	N	X
SAM131.0	tr	Ploughed	4	3	House	10	10	Associated with SAM 22.1; 132; 127.3-4 and 128	Scatter		B	G	G	B	N	X
SAM132.0	tr	Ploughed	4	3	House	10	5	Many pithoi found.	Scatter		N	N	N	N	N	X
SAM133.2			0	0	House/Tomb	0	0	Material found in UT 1.	Scatter		G	G	G	B	N	X
SAM134.0	ps	Brambles	1	3	House	15	15		Scatter		G	G	G	G	N	X
SAM135.0	tr	Ploughed	5	4	House	15	10		Scatter		B	B	B	B	N	X
SAM201.0		Fallow	2	0	House/Tomb	5	3		Scatter		N	N	N	N	N	X
SAM202.0			0	0	House	60	41	Podere Tartuchino excavation.	Struct.	Perkins and Attolini 1992.	N	B	G	G	N	X
SAM20.0	pa	Ploughed	5	3	House2	30	40		Scatter		X	X	X	X	X	G
SAM500.0	ac		4	4	House/Tomb	20	30		Scatter		N	G	G	B	N	X
SC100.0		Stubble	2	4	House2	70	40		Scatter		X	X	X	X	X	N
SC101.0		Stub/Macc	3	5	House2	50	40		Scatter		X	X	X	X	X	N
SC102.0		Stubble	2	4	House/Kiln	20	20		Scatter		X	X	X	X	X	N
SC104.0		Ploughed	5	5	House	30	25		Scatter		X	X	X	X	X	G
SC105.0		Pasture	2	3	House2	60	50		Scatter		X	X	X	X	X	N
SC106.0		Ploughed	5	3	House	5	5		Scatter		X	X	X	X	N	N
SC154.0	asc	Pasture	3	2	House/Tomb	10	9		Scatter		X	X	X	X	X	N
SC155.0	asc	Pasture	3	3	House/Tomb	8	6		Scatter		X	X	X	X	X	N
SC156.0	asc	Past/Oliv	3	3	House2	60	70		Scatter		X	X	X	X	X	N
SC158.0	asc	Pasture	2	3	House/Tomb	10	10		Scatter		X	X	X	X	X	N
SC159.0	asc	Pasture	2	4	House	30	40		Scatter		X	X	X	X	X	N
SC160.0	asc	Pasture	2	3	House	30	20		Scatter		X	X	X	X	X	N
SC167.0	ca	Pasture	3	4	House2	60	50		Scatter		X	X	X	X	X	G
SC168.0	asc	Pasture	3	3	Necropolis	25	15		Scatter		X	X	X	X	X	G
SC170.0	ca	Pasture	2	3	House	25	20		Scatter		X	X	X	X	X	N
SC171.0	asc	Pasture	2	3	House2	40	50		Scatter		X	X	X	X	X	N
SC173.0	ca	Macchia	2	2	House	20	10		Scatter		X	X	X	X	X	N
SC174.1	asc	Pasture	2	2	Scatter	10	5		Scatter		B	B	B	B	N	X
SC175.0	asc	Stubble	2	2	House/Tomb	0	0		Scatter		X	X	X	X	X	N
SC179.0	ca	Pasture	3	3	House	30	25		Scatter		X	X	X	X	X	G
SC182.0	ca	Past/Vege	3	3	House	15	15		Scatter		X	X	X	X	X	G
SC183.0	ca	Vegetable	3	3	House	40	20		Scatter		X	X	X	X	X	N
SC193.0	asc	Pasture	3	4	House	40	30		Scatter		X	X	X	X	X	N

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SD41.0	csr	Plou/Vine	4	3	Villa	100	100	Fragment of marble; plan visible in air photo.	Scatter		X	X	X	X	X	G
SD42.0	csr	Plou/Vine	4	2	Necropolis	15	2		Scatter		N	N	N	N	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SD43.1	csr	Plou/Wood	3	5	Villa	70	150	Column drums; marble head.	Scatter		X	X	X	X	X	G
SD44.0	csr	Plou/Oliv	4	0	House	10	10		Scatter		X	X	X	X	X	G
SD45.0	csr	Past/Macc	2	2	House2	30	40	Opus spicatum found.	Scatter		X	X	X	X	X	N
SD46.0	csr	Ploughed	5	3	House2	50	70	Fragments of marble found.	Scatter		X	X	X	X	X	G
SD47.0	csr	Ploughed	5	3	House2	50	50	Opus spicatum; 1 fragment of pink wall plaster found.	Scatter		X	X	X	X	X	G
SD50.0	csr	Ploughed	5	5	City	350	400	Colonia of Heba	Scatter		X	X	X	X	X	G
SD52.0	csr	Ploughed	5	2	Tomb	10	10		Scatter		X	X	X	X	X	N
SD53.0	cl	Ploughed	5	1	House/Tomb	10	10		Scatter		X	X	X	X	X	N
SD54.0	csr	Ploughed	5	2	Tomb	5	10		Scatter		B	B	B	B	N	X
SD55.0	cl	Ploughed	5	1	House/Tomb	25	25		Scatter		B	G	G	G	N	X
SD56.0	csr	Ploughed	5	2	House	15	15		Scatter		X	X	X	X	X	N
SD57.0	csr	Ploughed	5	3	House	20	20		Scatter		X	X	X	X	X	G
SD58.0	csr	Ploughed	5	5	Tomb	1	1	Burnt clay and bone; fragment of glass found.	Scatter		X	X	X	X	X	N
SD59.0	csr	Plou/Stub	5	4	House2	100	100	A nail and glass found.	Scatter		X	X	X	X	X	G
SD100.0	sr	Plou/Oliv	5	5	City	2400	1000	Doganella. Michelucci 1984; 1985b; Perkins and Walker 1990	Scatter	See comments	B	G	G	G	G	X
SD122.0	sr	Ploughed	5	0	Tomb	3	5	No tile or pottery. Patch of marl subsoil visible.	Scatter		N	N	N	N	N	X
SD123.0	sr	Ploughed	5	2	Tomb	2	2		Scatter		N	N	N	N	N	X
SD125.0	sr	Stub/Oliv	2	3	House	30	30		Scatter		X	X	X	X	N	N
SD127.0	sr	Ploughed	5	1	Tomb	2	3		Scatter		N	N	N	N	N	X
SD132.0			0	0	House/Tomb	0	0	Also Roman villa.	Scatter		N	B	B	B	N	N
SD133.0	ps	Plou/Oliv	5	4	House2	20	30		Scatter		X	X	X	X	G	G
SD141.1	csr	Plou/Oliv	5	4	House	30	60		Scatter		G	G	G	B	N	X
SD141.2	csr	Plou/Oliv	5	3	House	10	15		Scatter		N	B	B	B	N	X
SD141.3	csr	Plou/Vege	5	3	Necropolis	30	100		Scatter		G	G	G	G	N	X
SD142.0	csr		0	0	Road	0	0				B	B	B	B	N	X
SD149.2	sr	Ploughed	5	5	House/Tomb	0	0	UT 1 is a Roman villa; blocks of travertine and column bricks found.	Scatter		N	N	N	N	N	G
SD150.3	sr	Plou/Buil	5	5	House/Tomb	100	150	UT 1 is a Roman villa; Bassis villa under casale; baths; travertine columns.	Scatter		N	G	G	G	B	G
SD154.2	csr	Plou/Buil	5	5	Tomb	150	100	UT 1 is a Roman villa; Bassis villa under casale; baths; paving. UT 3 is a Roman necropolis.	Scatter		N	G	G	N	N	G
SD155.0	csr	Ploughed	5	2	House2	35	35	Glass found; = Dyson 52	Scatter	Dyson 1978	X	X	X	X	X	G
SD156.0	csr	Macchia	1	1	Necropolis	3	40		Scatter		B	G	G	B	N	X
SD157.0	cl	Ploughed	5	0	Necropolis	0	0	2 robbed chamber tombs; 1 with dromos (chamber 3 X 2m).	Excav.		B	G	N	N	N	X
SD158.0	csr	Plou/Oliv	5	2	Necropolis	5	40		Scatter		N	N	N	N	N	X
SD159.0	csr	Ploughed	5	1	Tomb	10	0		Scatter		N	N	N	N	N	X
SD163.0	csr	Plou/Oliv	5	2	House	30	20		Scatter		X	X	X	X	X	N
SD164.0	cl	Ploughed	5	1	Necropolis	10	20		Scatter		X	X	X	X	X	N
SD165.0	pcg	Ploughed	5	2	House/Tomb	30	25		Scatter		B	B	G	G	N	X
SD166.0	cl	Ploughed	5	3	Necropolis	80	100		Scatter		X	X	X	X	X	N
SD167.0	cl	Brambles	1	2	Cistern	0	0	Mortared; line (?aqueduct) visible in air photo.	Scatter		X	X	X	X	X	N
SD168.0	cl	Ploughed	5	3	House/Tomb	10	20		Scatter		G	G	G	G	N	X
SD172.0	tro	Pasture	1	0	House/Tomb	0	0		Scatter		X	X	X	X	X	N
SD173.0	tro	Plou/Macc	5	5	Villa	0	0	Opus spicatum found.	Scatter		X	X	X	X	X	G
SD174.1	tro	Harrowed	3	2	House/Tomb	0	0		Scatter		G	G	G	G	N	N
SD175.0	tro	Plou/Vine	3	4	Villa	150	100	Plan visible in aerial photo.	Scatter		X	X	X	X	N	G
SD176.0	csr	Buil/Vine	2	2	Villa?	0	0		Scatter		X	X	X	X	X	G
SD177.0	csr	Vegetable	2	2	Villa?	0	0		Scatter		X	X	X	X	X	G
SD178.0	csr	Vegetable	5	5	Villa	50	50	Informed of mosaics.	Scatter		X	X	X	X	X	G
SD179.0	csr	Vegetable	5	4	House2	30	30		Scatter		X	X	X	X	X	G
SD180.0	tro	Ploughed	5	0	Tomb	3	3	Trench on an ?artificial mound with limestones in the bottom. Bone found.	Scatter		G	G	G	G	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SD181.1	tro	Plou/Orch	5	4	House2/ Villa	100	100	Informed of 'cappuchino' burials. UT 2 is traces of a road.	Scatter		X	X	X	X	X	G
SD183.0	tro	Ploughed	5	3	Necropolis	10	10		Scatter		X	X	X	X	G	G
SD184.2	a	Plou/Buil	5	5	House/Tomb	200	100	UT 1 is a Roman villa; many amphorae and 2 column drums found.	Scatter		N	G	G	G	G	G
SD186.1	tro	Plou/Stub	2	1	House	0	0		Scatter		X	X	X	X	X	G
SD186.3	tro	Plou/Stub	2	1	House	0	0		Scatter		B	B	G	G	G	X
SD187.0	sr	Vegetable	1	0	House2	0	0	Squared blocks of stone.	Scatter		X	X	X	X	X	G
SD188.3	sr	Stubble	2	3	Necropolis	30	30	UT 1 is a Roman villa; UT 2 is a Roman house.	Scatter		B	G	G	B	N	G
SD189.1	tro	Ploughed	4	4	Necropolis	3	3		Scatter		G	G	G	B	N	X
SD190.0	sr	Ploughed	5	0	Tomb	2	2	1 fragment of cut tufo.	Scatter		N	N	N	N	N	X
SD191.0	csr	Plou/Vine	3	5	Villa	100	100	Blocks from press; capitals and columns.	Scatter		X	X	X	X	X	G
SD195.0	csr	Ploughed	5	1	House/Tomb	30	10		Scatter		B	B	B	B	N	X
SD199.0	cl	Vege/Buil	2	2	House2	40	30	2 blocks of travertine found.	Scatter		X	X	X	X	X	N
SD200.1	sr	Plou/Oliv	5	5	Villa	100	150		Scatter		X	X	X	X	X	G
SD204.0		Vineyard	0	0	House	20	15	Perkins and Walker 1990. 94	Scatter		N	N	N	N	N	X
SD205.0			0	0	Villa	0	0				X	X	X	X	X	G
SD215.1		Ploughed	0	0	House	7	2	Perkins and Walker 1990. 94	Scatter		N	N	N	N	N	X
SD215.2		Ploughed	0	0	Tomb	4	4	Perkins and Walker 1990. 93	Scatter		G	G	G	G	N	X
SD216.1		Ploughed	0	0	House/Kiln	7	7	Burnt clay and iron slag found. Perkins and Walker 1990. 94	Scatter		G	G	B	B	N	X
SD216.2		Ploughed	0	0	House/Kiln	5	8	Bricks found; ? kiln. Perkins and Walker 1990. 94	Scatter		G	G	B	B	N	X
SD217.0			0	0	Villa	0	0				X	X	X	X	N	G
SD220.0			0	0	Villa	0	0				X	X	X	X	X	G
SD223.0			0	0	House	0	0				X	X	X	X	X	N
SD225.0			0	0	Necropolis	0	0		Scatter		B	B	B	B	N	X
SD250.1		Ploughed	0	0	Necropolis	20	7	2 concentrations; 1 with bucchero 1 with coarseware. Perkins and Walker 1990. 93	Scatter		G	G	G	G	N	X
SD250.2		Ploughed	0	0	Tomb	2	3	Ploughed out tomb with stones and tiles. Perkins and Walker 1990. 93	Scatter		G	G	G	B	N	X
SD250.3		Ploughed	0	0	House/Kiln	12	14	Burnt pottery and ceramics found. Perkins and Walker 1990. 94	Scatter		B	G	G	G	N	X
SD250.4		Ploughed	0	0	Necropolis	5	3	Perkins and Walker 1990. 93	Scatter		N	N	N	N	N	X
SD251.0		Ploughed	0	0	Scatter	0	0	3 column drums in farm yard D.23cm; 42cm; 36cm. Perkins and Walker 1990. 93			B	B	B	B	N	X
SD251.1		Ploughed	0	0	Tomb	6	2	Perkins and Walker 1990. 93	Scatter		N	N	N	N	N	X
SD251.2		Ploughed	0	0	Tomb	0	0	4 blocks of travertine in situ forming the vault of a chamber or trench tomb.	Scatter	Perkins and Walker 1990. 93	B	B	N	N	N	X
SD251.3		Ploughed	0	0	Tomb	4	4	Perkins and Walker 1990. 93	Scatter		G	G	B	B	N	X
SD251.4		Ploughed	0	0	Tomb	4	4	Perkins and Walker 1990. 93	Scatter		N	N	N	N	N	X
SD251.5		Ploughed	0	0	Tomb	4	4	Perkins and Walker 1990. 93	Scatter		N	N	N	N	N	X
SD252.0		Vineyard	0	0	House	40	30	Perkins and Walker 1990. 94	Scatter		N	N	G	N	N	X
SD253.0		Ploughed	0	0	Tomb	0	0	Squared block of travertine 50 X 50cm. Perkins and Walker 1990. 93	Scatter		G	G	N	N	N	X
SD254.0		Ploughed	0	0	House	70	40	Also a Roman house2. Perkins and Walker 1990. 94	Scatter		N	N	N	N	N	G
SD255.0			0	0	House/Tomb	0	0		Scatter		G	G	B	B	N	X
SD256.0			0	0	Necropolis	0	0		Scatter		G	G	G	G	N	X
SD257.0			0	0	Necropolis	0	0	Also Roman necropolis and house/kiln.	Scatter		B	G	G	B	N	G
SD258.0			0	0	Villa/Kiln	0	0				X	X	X	X	X	G
SD259.0			0	0	Villa	0	0				X	X	X	X	X	G
SD260.0			0	0	House	0	0		Scatter		N	G	G	G	N	X
SD261.0			0	0	House	0	0		Scatter		G	G	G	G	G	X
SD262.0			0	0	House	0	0		Scatter		G	G	B	B	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
SD263.0			0	0	House	0	0	Also Roman.	Scatter		B	G	G	G	G	N
SD276.0			0	0	House	0	0				X	X	X	X	G	G
SD277.2			0	0	House	0	0	UT 1 is a Roman villa.	Scatter		G	G	G	G	G	G
SD278.0			0	0	House	0	0				X	X	X	X	X	N
SD300.0	cl	Macchia	1	0	Necropolis	15	20	5 chamber tombs (c.40m. from SD302)	Struct.		B	G	N	N	N	X
SD301.0	cl	Macchia	0	0	Tomb	2	2	Rectangular chamber with bed on left and 2 inscribed alphabets	Struct.	Johnston and Kennet 1984	B	G	N	N	N	X
SD302.0	cl	Macchia	1	0	Necropolis	30	30	3 chamber tombs (c.40m. from SD 300)	Struct.		B	G	N	N	N	X
SD350.0	s		0	0	Kiln	0	0	Albinia amphora kilns.	Biblio g	Peacock 1977	X	X	X	X	X	G
TAL1.3	cv	Plou/Past	0	0	House?	0	0		Scatter		X	X	X	X	X	G
TAL5.0	cv		0	0	Villa	0	0	Mosaic found.	Scatter		X	X	X	X	X	G
TAL101.3	a	Fallow	1	1	House/Tomb	50	50	UT 1 is a Roman house; UT 2 is a Roman imperial monumental tomb.	Scatter	Sommella 1967. 27	B	B	G	G	N	G
TAL104.0	cv	Fall/Oliv	1	1	House/Tomb	20	20	Informed of tombs.	Scatter		X	X	X	X	X	N
TAL10.0	cv	Pasture	1	1	House/Tomb	20	20		Scatter		N	B	G	G	N	X
TAL110.1	n	Buil/Oliv	1	1	Minor Centre	400	300	Talamonaccio (=TAL 116). No traces of structure visible.	Scatter		G	G	G	G	G	G
TAL110.2	n	Vege/ Macc	0	0	Temple	70	20	Talamonaccio; no traces visible.	Struct.	Von Vacano 1985	G	G	G	G	G	G
TAL113.3	gp	Ploughed	5	1	House/Tomb	0	0	UT 1 is a Roman villa with marble and mosaic; UT 2 is a funerary inscription CIL XI 2641 2642.	Scatter	Sommella 1967. 5	B	B	B	B	G	G
TAL115.0	mg	Past/Oliv	5	0	Village	100	100	Port? Loom weight found. Architectural terracottas found in the past.	Scatter	Sommella 1967. 11	G	G	G	G	N	N
TAL120.0	tp	Past/ Wood	0	0	Statio	0	0	Informed of mosaic; baths also.			X	X	X	X	X	N
TAL150.0	a	Stubble	3	1	House/Kiln	50	40	Wasters; poorly fired tiles; kiln bricks and squared stone found.	Scatter		X	X	X	X	X	N
TAL152.0	ps	Past/Macc	3	1	House/Kiln	60	70		Scatter		X	X	X	X	X	N
TAL153.1	ps	Past/Macc	3	1	Necropolis	10	10		Scatter		X	X	X	X	X	N
TAL154.1	sr	Past/Stub	3	2	House2/ Kiln	50	30	Wasters; poorly fired tiles; kiln bricks and opus spicatum found.	Scatter		X	X	X	X	X	G
TAL155.0	pg	Stubble	1	1	House2	50	50	Cocciopesto found.	Scatter		X	X	X	X	X	N
TAL201.2	mg	Vegetable	1	0	House/Tomb	0	0	Material found in UT 1 - a Roman villa.	Scatter		B	B	B	B	N	N
TAL202.0	mg	Stubble	0	0	House	20	20		Scatter		X	X	X	X	X	G
TAL203.0	mg	Pasture	0	0	House	20	20		Scatter		X	X	X	X	X	N
TAL204.0	mp	Vines	3	1	House	20	20		Scatter		X	X	X	X	X	N
TAL206.0	ps	Pasture	0	0	House	0	0	Visible in aerial photograph.	Scatter		X	X	X	X	N	N
TAL207.0	gp	Pasture	0	0	Villa	250	200	Informed of travertine capitals.	Scatter		X	X	X	X	X	N
TAL216.2	tp	Pasture	0	0	House/Tomb	0	0	UT 1 is a Roman villa; related to TAL120.	Scatter		B	B	B	B	N	N
TAL217.1	cv	Stubble	0	0	House	20	30		Scatter		B	B	B	B	N	X
TAL218.0	np	Pasture	0	0	House	0	0		Scatter		X	X	X	X	X	N
TAL219.0	n	Fallow	0	0	House2	60	70		Scatter		X	X	X	X	G	G
TAL220.0	to	Olives	0	0	House/Tomb	5	7		Scatter		X	X	X	X	X	N
TAL302.2	sr	Stubble	0	0	House/Tomb	25	25	UT 1 us a Roman house.	Scatter		B	B	G	G	G	N
TAL304.0			0	0	Scatter	0	0		Scatter		B	B	B	B	N	X
TAL305.2			0	0	House/ Tomb	0	0	Material found in UT 1.			N	N	N	N	G	X
TAL401.0	tp	Vegetable	2	2	House2	80	120		Scatter		X	X	X	X	X	N
TAL402.0			0	0	Scatter	0	0		Scatter		B	B	B	B	N	X
TAL405.3			0	0	House/Tomb	0	0		Scatter		G	G	B	B	G	X
TAL417.0	tp	Stubble	0	0	House	0	0		Scatter		X	X	X	X	X	N
TAL418.2	tp	Plou/Stub	0	0	House/Tomb	25	20	UT 1 is a Roman house.	Scatter		N	N	N	N	G	G
TAL419.1	tp	Ploughed	1	1	House/Tomb	10	10		Scatter		B	B	B	B	N	X

Site/UT	Geol.	Vegetation	Vis.	D	Interpretation	Size x	Size y	Comments	Definition	Bibliog	7th	6th	5th	4th	3rd	2nd
TAL422.1	a	Fallow	2	2	House	100	100		Scatter		G	G	G	G	G	X
TAL423.0	tp	Ploughed	1	1	House/Tomb	10	10		Scatter		N	G	N	N	N	X
TAL424.1	s	Fallow	2	1	House	50	25		Scatter		X	X	X	X	N	N
TAL425.0			0	0	House/Tomb	0	0		Scatter		B	B	B	B	G	X
TAL426.0			0	0	House	0	0		Scatter		G	G	B	B	N	X
TAL427.0	s	Beach	0	0	Port	0	0	Port at the mouth of the Albegna; Soprintendenza excavations.	Excav.	Ciampoltrini 1985c	X	X	X	X	X	G

Appendix 2: Site numbers listed by dating

7th Century BC

Site type	In sample transects			Out of sample transects		
	Number of certainly occupied sites	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of possibly occupied sites	Maximum possible number of sites
City	0	1	1	0	0	0
Minor Centre	2	1	3	0	1	1
Fortified Hill Top	0	3	3	0	2	2
Village	5	0	5	0	3	3
Village/Kiln	1	0	1	0	0	0
House	18	53	71	10	24	34
House/Kiln	1	1	2	1	2	3
Kiln	0	1	1	0	1	1
Scatter	3	0	3	0	9	9
House/Tomb	23	80	103	6	59	65
Necropolis/House	0	0	0	0	2	2
Necropolis	22	71	93	11	30	41
Tomb	14	0	14	5	14	19
Road?	0	0	0	0	1	1
Terracing	0	0	0	0	1	1
Cuniculi	0	2	2	0	1	1
Total settlements	30	60	90	11	42	53
Total settlement/burial	23	80	103	6	61	67
Total burials	36	71	107	16	44	60
Total others	0	2	2	0	3	3
Sub total	89	213	302	33	150	183
Grand total	396					

6th Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
City	1	0	0	1	0	0	0	0
Minor Centre	2	2	1	3	1	0	0	1
Fortified Hill Top	0	0	3	3	0	0	2	2
Village	6	5	0	6	3	0	0	3
Village/Kiln	1	1	0	1	0	0	0	0
House	33	17	38	71	15	10	19	34
House/Kiln	2	1	0	2	3	2	1	4
Kiln	0	0	1	1	0	0	1	1
Scatter	7	3	6	13	3	0	6	9
House/Tomb	36	23	67	103	26	6	0	26
Necropolis/House	0	0	0	0	1	0	1	2
Necropolis	49	20	44	93	24	11	17	41
Tomb	27	14	37	64	10	4	9	19
Road?	0	0	1	1	0	0	1	1
Terracing	0	0	0	0	0	0	1	1
Cuniculi	0	0	2	2	0	0	1	1
Temple	0	0	1	1	0	0	0	0
Total settlements	52	29	49	101	25	12	29	54
Total settlement/burial	36	23	67	103	27	6	1	28
Total burials	76	34	81	157	34	15	26	60
Total others	0	0	4	4	0	0	3	3
Sub total	164	86	201	365	86	33	59	145
Grand total	510							

5th Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
City	1	1	0	1	0	0	0	0
Minor Centre	3	2	0	3	1	1	0	1
Fortified Hill Top	0	0	3	3	1	0	1	2
Village	7	6	0	7	3	3	0	3
Village/Kiln	1	1	0	1	0	0	0	0
House	35	27	36	71	15	14	19	34
House/Kiln	1	1	1	2	2	1	2	4
Kiln	0	0	1	1	0	0	1	1
Scatter	6	5	7	13	2	1	7	9
House/Tomb	40	26	63	103	27	22	38	65
Necropolis/House	0	0	0	0	1	1	1	2
Necropolis	40	35	53	93	15	11	26	41
Tomb	17	14	47	64	5	4	14	19
Road?	0	0	1	1	0	0	1	1
Terracing	0	0	0	0	0	0	1	1
Cuniculi	0	0	2	2	0	0	1	1
Temple	0	0	1	1	0	0	0	0
Total settlements	54	43	48	102	24	20	30	54
Total settlement/burial	40	26	63	103	28	23	39	67
Total burials	57	49	100	157	20	15	40	60
Total others	0	0	4	4	0	0	3	3
Sub total	151	118	215	366	72	58	112	184
Grand total	550							

4th Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
City	1	1	0	1	0	0		0
Minor Centre	3	3	0	3	1	1		1
Fortified Hill Top	0	0	3	3	0	0	2	2
Village	6	6	0	6	3	3		3
Village/Kiln	1	1	0	1	0	0		0
House	21	21	50	71	11	11	23	34
House/Kiln	1	1	1	2	1	1	3	4
Kiln	0	0	1	1	0	0	1	1
Scatter	2	2	11	13	1	1	8	9
House/Tomb	25	25	78	103	17	17	48	65
Necropolis/House	0	0	0	0	1	1	1	2
Necropolis	24	23	69	93	11	9	30	41
Tomb	11	10	53	64	4	4	15	19
Road?	0	0	1	1	0	0	1	1
Terracing	0	0	0	0	0	0	1	1
Cuniculi	0	0	2	2	0	0	1	1
Temple	0	0	1	1	0	0		0
Total settlements	35	35	66	101	17	17	37	54
Total settlement/burial	25	25	78	103	18	18	49	67
Total burials	35	33	122	157	15	13	45	60
Total others	0	0	4	4	0	0	3	3
Sub total	95	93	270	365	50	48	134	184
Grand total	549							

3rd Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
City	2	1	0	2	0	0	0	0
Minor Centre	2	2	1	3	1	1	0	1
Fortified Hill Top	0	0	3	3	0	0	2	2
Port	1	0	1	2	0	0	0	0
Village	2	2	0	2	1	1	2	3
Village/Kiln	1	1	0	1	0	0	0	0
Villa	2	0	3	5	1	0	5	6
House 2/Villa	1	0	0	1	0	0	0	0
House 2	3	0	6	9	3	0	3	6
House2/Kiln	0	0	0	0	0	0	2	2
House	6	5	80	86	5	5	32	37
House/Kiln	0	0	2	2	0	0	4	4
Kiln	0	0	1	1	0	0	1	1
Scatter	0	0	13	13	0	0	9	9
House2/Necropolis	1	0	0	1	0	0	0	0
House/Necropolis	0	0	0	0	1	0	1	2
House/Tomb	15	6	89	104	8	5	57	65
Necropolis	10	8	84	94	0	0	0	0
Tomb	3	3	61	64	1	1	18	19
Terracing				0	0	0	1	1
Cuniculi	0	0	2	2	0	0	1	1
Road?	0	0	1	1	0	0	1	1
Temple	1	0	0	1	0	0	0	0
Total settlements	20	11	110	130	11	0	60	71
Total settlement/burial	16	6	89	105	9	5	63	72
Total burials	13	11	145	158	1	1	18	19
Total others	1	0	3	4	0	0	3	3
Sub total	50	28	347	397	21	6	144	165
Grand total	562							

2nd Century BC

Site type	In sample transects				Out of sample transects			
	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites	Number of certainly occupied sites	Number of sites also occupied in previous period	Number of possibly occupied sites	Maximum possible number of sites
City	2	1	0	2	0	0	0	0
Minor Centre	2	2	0	2	1	1	0	1
Statio	0	0	1	1	1	0	0	1
Port	2	1	0	2	1	0	0	1
Village	3	1	3	6	3	0	2	5
Village?	1	0	1	2	0	0	0	0
Villa/Village	0	0	1	1	0	0	0	0
Village/Kiln	2	1	0	2	1	0	0	1
Villa	24	2	8	32	28	1	11	39
Villa?	0	0	1	1	4	0	0	4
Villa/Kiln	3	0	0	3	1	0	0	1
House 2/Villa	3	1	0	3	0	0	0	0
House 2	29	3	16	45	22	3	5	27
House2/Kiln	2	0	0	2	3	0		3
House	53	1	72	125	26	3	22	48
House/Kiln	1	0	6	7	0	0	4	4
Scatter	2	0	3	5	2	0	0	2
Villa/Necropolis	0	0	1	1	0	0	0	0
House2/Necropolis	1	1	0	1	0	0	0	0
House/Necropolis				0	2	1	0	2
House/Tomb	34	7	54	88	20	5	15	35
Necropolis	10	4	10	20	7	0	3	10
Tomb	7	0	9	16	5	0	3	8
Kiln	2	0	1	3	1	0	1	2
Kiln?	1	0	0	1	0	0	0	0
Bridge	1	0	0	1	0	0	1	1
Road	1	0	1	2	0	0	0	0
Temple	1	1	0	1	0	0	0	0
Terracing				0	0	0	1	1
Cuniculi	0	0	1	1	0	0	0	0
Cistern	0	0	1	1	0	0	0	0
Wall	0	0	2	2	0	0	0	0
Dump	1	0	0	1	1	0	1	2
Dump/Wall	1	0	0	1	0	0	0	0
Total settlements	129	13	112	241	93	8	44	137
Total settlement/burial	35	8	55	90	22	6	15	37
Total burials	17	4	19	36	12	0	6	18
Total others	8	1	6	14	2	0	4	6
Sub total	189	26	192	381	129	14	69	198
Grand total	579							

Bibliography

Almagro-Gorbea ,M. (1992) Les Etrusques et la péninsule Ibérique, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 174-9, Réunion des musées nationaux, Paris.

Ampolo, C. (1987) Per uno studio dell'alimentazione dell'Etruria e di Roma arcaica, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 9-16, Istituto Poligrafico e Zecca dello Stato, Rome.

Attolini, I., Cambi, F., Celuzza, M.G., Fentress, E.B., Pasquinucci, M., and Regoli, E. (1982) Ricognizione archeologica nell'Vger Cosanus e nella Valle dell' Albegna. Rapporto preliminare 1981, *Archeologia Medievale* IX, 365-85.

Attolini, I. and Perkins, P. (1992) The Excavation of an Etruscan Farm at Podere Tartuchino, *Papers of the British School at Rome*, 60, 1-76.

Banti, L. (1973) *The Etruscan cities and their culture*, B.T. Batsford, London.

Barbieri, G. (ed) (1987) *L'alimentazione nel mondo antico. Gli etruschi*, Istituto Poligrafico e Zecca dello Stato, Rome.

Barbieri, G. (1987b) La tomba Golini I e la cista di Bruxelles: due rappresentazioni di "cucina", in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 119-22, Istituto Poligrafico e Zecca dello Stato, Rome.

Barker, G.W. (1972) The conditions of cultural and economic growth in the Bronze Age of central Italy, *Proceedings of the Prehistoric Society*, 38, 170-208.

Barker, G.W. (1976) Animal husbandry at Narce, in Potter, T.W. *A Faliscan town in south Etruria*, 295-307, British School at Rome, London.

Barker, G.W. (1985) The development of landscape archaeology in Italy in Malone, C. and Stoddart, S. (eds) *Papers in Italian Prehistory IV (I) The human landscape*, 1-19, British Archaeological Reports International Series, 243, Oxford.

Barker, G.W. (1987) Archeologia del paessaggio ed agricoltura etrusca, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 17-32, Istituto Poligrafico e Zecca dello Stato, Rome.

Barker, G. W. (1988) Archaeology and the Etruscan countryside. *Antiquity*, 62, 772-85.

Barker, G.W. (1991) Two Italys, one valley: an *Annaliste* perspective, in Bintliff, J. (ed) *The annales school and archaeology*, Leicester University Press, Leicester, London, 34-56.

Barker, G.W. and Grant, A. (1991) Ancient and modern pastoralism in central Italy: an interdisciplinary study in the Cicolano mountains, *Papers of the British School at Rome*, 59, 15-88.

Barker, G.W. and Lloyd, J. (eds). (1991) *Roman Landscapes: Archaeological Survey in the Mediterranean region*, British School at Rome, London.

Barker, G.W., Grant, A. and Rasmussen, T. (1993) Approaches to the Etruscan Landscape: the development of the Tuscania Survey, in Bogucki, P. (ed) *Case studies in European Prehistory*, 229-57, CRC Press, Florida.

Bartoloni, G. (1972), *Le tombe da Poggio Buco nel Museo Archeologico di Firenze*, Florence.

Bartoloni, G. (1989) *La cultura villanoviana*, La Nuova Italia Scientifica, Rome.

Bartoloni, G. and Grottanelli, C. (1984) I carri a due ruote nelle tombe femminili del Lazio e dell'Etruria. *Opus* III,2, 383-410.

Becatti, G. (1934) *Foglio 130 (Orvieto) Edizione archeologica della Carta d'Italia al 100,000*, Florence.

Bedini, A. (1984) Scavi al Torrino. *Archeologia Laziale* VI,84-90.

Beloch, G. (1898) Le città dell'Italia antica, *Atene e Roma*, 1 (6), 257-78.

Benndorf, O. (1867) Scavi di Orbetello, *Bulletino dell'Instituto di Correspondenza Archeologica*, 145-8.

Bianchi Bandinelli, R. (1925) Clusium: ricerche archeologiche e topograrafiche su Chiusi e il suo territorio in età etrusca, *Monumenti Antichi*, XXX, 210-584.

Bianchi Bandinelli, R. (1927) *Foglio 129 (S.Fiora) Edizione archeologica della Carta d'Italia al 100,000*, Florence.

Bianchi Bandinelli, R. (1927b) *Foglio 121 (Montepulciano) Edizione archeologica della Carta d'Italia al 100,000*, Florence.

Bianchi Bandinelli, R. (1927c) *Foglio 120 (Siena) Edizione archeologica della Carta d'Italia al 100,000*, Florence.

Bianchi Bandinelli, R. (1929) *Sovana*, Florence.

Blanck, H. (1987) Utensili della cucina etrusca, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 107-18, Istituto Poligrafico e Zecca dello Stato, Rome.

Blanck, H. (1992) Démons étrusques et démons médiévaux, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 240-45, Editions de la Réunion des musées nationaux, Paris.

Blanck, H. and Proietti, G. (1986) *La tomba dei rilievi di Cerveteri*. De Luca Editore, Rome.

Boardman, J. (1974) *Athenian black figure vases*, Thames and Hudson, London.

Bocci Pacini, P (1978) *Roselle: gli scavi e la mostra*, Pacini Editore, Pisa

Boëthius, A. (1978) *Etruscan and early Roman architecture*, 2nd edition, Penguin Books, Harmondsworth.

Bosio, B. and Pugnetti, A. (1986) *Gli Etruschi di Cerveteri*, Edizioni Panini, Modena.

Bound, M. (1991) The pre-Classical wreck at Campese bay, island of Giglio. Second interim report. 1983 season. *Studi e materiali*, VI, 199-244.

Bouloumié B. (1972) Murlo (Poggio Civitate, Siena): Céramique grossière locale. L´instrumentum culinaire. *Mélanges de l'École Français de Rome, Antiquité*, 84, 61-110.

Bouloumié, B. (1992) Le commerce maritime dans le Sud de la France, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 168-73, Réunion des musées nationaux, Paris.

Bouloumié Marique, A. (1978) La ceramique commune de Murlo (Poggio Civitate), *Mélanges de l'École Français de Rome, Antiquité*, 90, 51-89.

Braudel, F. (1975) *The Mediterranean and the Mediterranean world in the age of Philip II*, Fontana Press, London.

Braun, (1840) *Bulletino dell'Instituto di Correspondenza Archeologica*, 12,147.

Braun, (1841) Lettera trasmessa dal Sig. Raffaello De Witt *Bulletino dell'Instituto di Correspondenza Archeologica*, 13, 21-22.

Bronson, C. and Uggeri, G. (1970) Isola del Giglio, isola di Giannutri, Monte Argentario, laguna di Orbetello, *Studi Etruschi*, 38, 201-14.

Brown, F.E. (1980) *Cosa. The making of a Roman town*, Ann Arbour.

Brunt, P.A. (1971) *Italian manpower, 225 B.C. - A.D. 14*, Clarendon Press, Oxford.

Burrough, P.A. (1986) *Principles of Geographical Information Systems for Land Resources Assessment*, Clarendon Press, Oxford.

Caccioli, D. and Whitehead, J. (1994) New researches at La Piana, 1991-1993, *American Journal of Archaeology*, 98, No.2, 319-20.

Cambi, F., Castagna, M., Celuzza, M.G., Fentress, E.B., Perkins, P. and Regoli, E. (1991) Political Geography and productive geography between the valleys of the Albegna and the Fiora in northern Etruria, in Barker, G. and Lloyd, J. (eds). *Roman Landscapes: Archaeological Survey in the Mediterranean region,* 142-152, British School at Rome, London.

Cambi, F. and Fentress, E. (1988) Il progetto topografico Ager Cosanus - Valle dell' Albegna, in Noyé, G. (ed) *Structures de l'habitat et occupation du sol dans led pays Méditerranéens: les méthodes et l'apport de l'archéologie extensive*, Collection de l'École Français de Rome, 105, Publications de la casa de Velázquez - Série Archéologie Fasc. IX, Rome-Madrid.

Camporeale, G. (1967) La tomba del Duce, Florence.

Camporeale, G. (1969) *I commerci di Vetulonia in età orentalizzante*, Florence

Camporeale, G. (1977) Cultura vulcente nell'Etruria centro - orientale, in *La civiltà arcaica di Vulci e la sua espansione, Atti del X convegno di studi etruschi e italici, Grosseto - Roselle - Vulci 1975,* 226-37.

Camporeale G. *et al.* (1985) Lago dell'Accesa in Camporeale, G. (ed) *L'Etruria Mineraria.* 127-178, Electa, Milan.

Camporeale G. (1986) Vita privata, in Pallottino, M., Torelli, M., Cristofani, M., Camporeale, G., Colonna, G., Roncalli, F., Mansuelli, G.A., Bonghi Jovino M. and De Simone, C. *Rasenna: Storia e civiltà degli Etruschi*., Libri Scheiwiller, Milan, 214-30.

Camporeale, G. (1992) L'Etrurie des cités, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 62-71, Réunion des musées nationaux, Paris.

Camporeale, G. (ed) (1997) *L'abitato Etrusco dell'Accesa. Il Quartiere B*, Giorgio Bretschneider Editore, Rome.

Capecci, G. (ed) (1987), *Artimino (Firenze) Scavi 1974*, Comune di Carmignano, Florence

Cappelli, A. (1930), Rinvenimenti archeologici nell'impianto di una macchina idrovora a Bengodi *Notizie degli Scavi di Antichità*, ,300-1.

Carandini, A. (ed) (1985a) *La romanizzazione dell'Etruria: il territorio di Vulci*, Electa, Milan.

Carandini, A. (ed) (1985b) *Settefinestre. Una villa schiavistica nell'Etruria romana*, 3 Vols., Panini, Modena.

Carandini, A. (1988) *Schiavi in Italia*, La Nuova Italia Scientifica, Rome.

Carandini, A. and Fentress, E. (eds.) in press, *Paesaggi storici tra l'Albegna e la Fiora, I.*

Carandini, A. and Settis, S. (1979) *Schiavi e padroni nell' Etruria romana: la villa di Settefinestre dallo scavo alla mostra*, De Donato, Bari.

Cardarelli, R. (1924-5) Confini fra Magliano e Marsiliana; fra Manciano e Montauto, Scerpenna, Stachilagi; fra Tricosto e Ansedonia; fra Orbetello e Marsiliana, fra Port'Ercole e Monte Argentario (28 dicembre 1508 - 2 marzo 1510), *Maremma* 1, 131-42, 155-86, 205-24; 2, 3-36, 75-128, 147-214.

Cardosa, M. (In press) L'età del bronzo - l' età del ferro, in Carandini, A. and Fentress, E. (eds.) in press, *Paesaggi storici tra l'Albegna e la Fiora, I*

Cattani, M. (1987) Aes rude, in De Marinis, R. (ed) *Gli etruschi a nord del Po*, 204-210, Regione Lombardia, Mantua.

Celuzza, M.G. (1985) Un insediamento di contadini: la fattoria di Giardino, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 106-7, Electa, Milan.

Celuzza, M. G. and Regoli, E. (1982) La Valle d'Oro nel territorio di Cosa. Ager Cosanus e Ager Veientanus a confronto, *Dialoghi di Archeologia*, 1, 31-62

Celuzza, M.G. and Rendini, P. (1991) *Relitti di storia*, Nuova immagine editrice, Sienna.

Cherry, J. F. (1983) Frogs around the pond: perspectives on current archaeological survey projects in the Mediterranean region, in Keller, D. R. and Rupp, D. W. (eds) *Archaeological Survey in the Mediterranean area*, British Archaeological Reports International Series, 155, 375-416.

Christie, N. (ed), (1991) *Three South Etrurian churches: Santa Cornelia, Santa Rufina and San Liberato,* London: British School at Rome.

Chisholm, M. (1979) *Rural settlement and land use*, 3rd(ed), Hutchinson, London.

Ciampoltrini, G. (1985) Talamone e l'area costiera, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 115-8, Electa, Milan.

Ciampoltrini, G. (1985b) Orbetello, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 91-5, Electa, Milan.

Ciampoltrini, G. (1985c) Una statua ritratto di età imperiale dalla foce dell'Albegna, *Prospettiva* 43, 43.

Ciampoltrini, G. (1991) Orbetello (GR): Scavi in località La Parrina, *Studi e materiali*, VI, 260-69.

Ciampoltrini, G. (1995) Un pocolom e le mura di Orbetello, *Archeologia Classica* XLVII, 289-302.

Ciampoltrini, G. (in press) Talamone, in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Ciampoltrini, G. (in press b) Orbetello, in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Ciampoltrini, G., Rendini, P. and Wilkens, B. (1989-90) L'alimentazione nell'abitato Etrusco di Montecatino in Val Freddana (Lucca), Studi Etruschi LVI, 271-84.

Clark, G. (1987-8) A group of animal bones from Cerveteri, *Studi Etruschi* LV 254-69.

Cliff, A.D. and Ord, J.K. (1981) *Spatial processes: models and applications*, Pion, London.

Coarelli, F. (ed) (1975) *Etruscan Cities*, Cassell, London.

Colonna, G. (1977) La presenza di Vulci nella valli del Fiora e dell'Albegna prima del IV secolo a.C. , in *La civiltà arcaica di Vulci e la sua espansione, Atti del X convegno di studi etruschi e italici, Grosseto - Roselle - Vulci 1975*, 189-214, Florence.

Colonna, G. (1987) Pyrgi, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 77-81, Istituto Poligrafico e Zecca dello Stato, Rome.

Colonna, G. (1992) L'aventure romantique, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 322-39), Editions de la Réunion des musées nationaux, Paris.

Comella, A.M. (1985), Nota sulla coroplastica falisca, in Sotgiu, G. (ed) *Studi in onore di Giovanni Lilliu per il suo settantesimo compleanno*, 83-98, Università di Cagliari, Cagliari.

Compagnoni, B. et al. (1978) *Carta geologica d'Italia al 1:500,000*, Servizio geologico d'Italia, Rome.

Corridi, C. (1987-8) Analisi preliminari dei reperti faunistici rinvenuti in due scavi archeologici in Roselle, *Studi Etruschi* LV, 227-33.

Cosci, M. (1988) *Fotointerpretazione archeologica - Guida practica per gli studenti*, All'Insegna del Giglio, Firenze.

Costantini, L., Costantini Biasini, L. and Scali, S. (1987) Bolsena-Gran Carro, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 61-71, Istituto Poligrafico e Zecca dello Stato, Rome.

Costantini, L. and Costantini Biasini, L. (1989) I vegetali dell'area sacra di S. Omobono. in Pisani Sartorio, G. *et al. Il viver quotidiano in Roma arcaica*, Edizioni Procom, Rome.

Cristofani, M. (1970) Kotyle d'argento dal circolo degli avori di Marsiliana d'Albegna, *Studi Etruschi,* 38, 271-80.

Cristofani, M. (1971) Per una nuova lettura della pisside di Pania, *Studi Etruschi,* 39, 63-89.

Cristofani, M. (1973) *Introduzione allo studio dell'etrusco*, Olschki Editore, Florence.

Cristofani, M. (1977) Problemi poleografici dell'Agro Cosano e Caletrano in età arcaica, in *La civiltà arcaica di Vulci e la sua espansione, Atti del X convegno di studi etruschi e italici, Grosseto - Roselle - Vulci 1975*, 235-257.

Cristofani, M (ed) (1981) *Gli etruschi in maremma*, Silvana Editoriale, Milan.

Cristofani, M. (1982) Talamone. Il mito dei Sette a Tebe, *Prospettiva*, 28, 92-5

Cristofani, M. (ed) (1985) *Civiltà degli etruschi*, Electa, Milan.

Cristofani, M. (ed) (1985b) *Il commercio etrusco arcaico*, Rome.

Cristofani, M. (1987) Duo sunt liquores, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi,* 37-40, Istituto Poligrafico e Zecca dello Stato, Rome.

Cristofani, M. (1987b) Il banchetto in Etruria, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi,* 123-34, Istituto Poligrafico e Zecca dello Stato, Rome.

Cristofani, M. and Michelucci, M. (1981) La valle dell'Albegna, in Cristofani, M (ed) *Gli etruschi in maremma*, Silvana Editoriale, Milan.

Cristofani, M. *et al.* (1985) Le attività produttive, in M.Cristofani (ed) *Civiltà degli etruschi.* 137-174, Electa, Milan.

Cristofani, M. (1991) Rivista di epigrafia etrusca, *Studi Etruschi*, 57, 285-87.

Curri, C.B. (1978) *Forma Italiae, Regio VII, Vol. V Vetulonia I*, Firenze.

d'Agostino, B. *et al.* (1985) La formazione dei centri urbani, in M.Cristofani (ed) *Civiltà degli etruschi.* 43-78, Electa, Milan.

Delano-Smith, C. (1978) Coastal sedimentation, lagoons and ports, in Blake, H. McK., Potter, T.W. and Whitehouse, D.B. (eds) *Papers in Italian Archaeology I*, 20-28, British Archaeological Reports International Series, 41(i), Oxford.

Del Chiaro, M.A. (1976) *Etruscan Ghiaccioforte*, University of California at Santa Barbara, Santa Barbara.

Del Chiaro, M.A. (1990) Second interim report on the excavation of a Roman villa in Tuscany, *Journal of Roman Archaeology*, 3, 155-8.

De Marinis, G. (1977) *Topografia storica della val d´Elsa in periodo Etrusco* Società Storica della Valdelsa, Florence.

De Marinis, R. (1987) Aes signatum, in De Marinis, R. (ed) *Gli etruschi a nord del Po*, 201-03, Regione Lombardia, Mantua.

Dennell, R.W. (1987) Geography and prehistoric subsistence, in Wagstaff, J.M. (ed) *Landscape and culture*, 56-76, Basil Blackwell, Oxford.

Dennis, G. (1845) On an Etruscan city, recently discovered, and probably the Vetulonia of antiquity, *Classical Museum*, 2, 229-246.

Dennis, G. (1848) *Cities and cemeteries of Etruria*, (1st ed) Murray, London.

Dennis, G. (1878) *Cities and cemeteries of Etruria*, (2nd ed) Murray, London.

Derry, T.K. and Williams, T.I. (1960) *A short history of technology*. Oxford University Press, Oxford.

Di Gennaro, F. (1982) Organizzazione del territorio nell'Etruria meridionale protostorica: applicazione di un modello geografico *Dialoghi di Archeologia* 4, 102-12.

Donati, L. (1989) *Le tombe da Saturnia nel museo archeologico di Firenze, Monumenti Etruschi 5*, Olschki, Florence.

Donati, L. (1994) *La casa dell'Impluvium. Architettura Etrusca a Roselle*. Giorgio Bretschneider, Roma.

Donati, L. and Michelucci, M. (1981) *La collezione Ciacci nel Museo Archeologico di Grosseto*, DeLuca, Rome.

Downey, S.B. (1995) *Architectural Terracottas from the Regia*, Papers and monographs of the American Academy at Rome 30, University of Michigan Press, Ann Arbor.

Dyson, S. (1978) Settlement patterns in Ager Cosanus. The Wesleyan University Survey, *Journal of Field Archaeology*, 5, 251-68.

Enei, F. (1992) Ricognizioni archeologiche nell' Ager Caeretanus. Rapporto preliminare, in Herring, E., Whitehouse, R. and Wilkins, J. (eds)., *Papers of the Fourth Conference of Italian Archaeology, Vol.3 part 1,* 71-90, Accordia Research Centre, London.

Fentress, E.B., Clay, T. Hobart, M. And Webb, M. (1991) Late Roman and Medieval Cosa I: The Arx and the structure near the eastern height, *Papers of the British School at Rome*, 59, 197-230.

Fentress, E.B. and Perkins, P.E. (1989) Counting African Red Slip Ware, *L'Africa Romana 5*, Atti del V Convegno di Studio, Sassari, 205-14.

Finley, M.I. (1979) *The ancient economy*, Book Club Associates, London.

Fiorelli, G. (1877) Telamone *Notizie degli Scavi d'Antichità*,244.

Fiorelli, G. (1878) Telamone *Notizie degli Scavi d'Antichità*,129.

Forni, G. (1989) Questioni di storia agraria pre-romana: le quattro fasi dell'agricoltura etrusca, in Maetzke, G. (ed) *Secondo congresso internazionale etrusco. 1985*, 1501-16, Bretschneider, Rome.

François, A. (1849) Scavi vulcenti e cossani, *Bulletino dell'Instituto di Correspondenza Archeologica*, 66-8.

François, A. (1851) Necropoli di Roselle, Telamone, Cossa, *Bulletino dell'Instituto di Correspondenza Archeologica*, p.3-11.

von Freytag, B. (1977) La ricomposizione del frontone di Talamone, in Cristofani, M. and Martelli, M. (eds). *Caretteri dell' ellenismo nelle urne etrusche*, 150-65, Florence.

Gaffney, C., Gaffney, V. And Tingle, M. (1985) Settlement, economy or behaviour? Micro-regional land use models and the interpretation of surface artefact patterns, in Haselgrove, C. Millett, M. and Smith, I. (eds.) *Archaeology from the ploughsoil. Studies in the collection and interpretation of field survey data*, 95-107, Department of Archaeology, University of Sheffield, Sheffield.

Gaffney, V. and Stancic, Z. (1992) Diodorus Siculus and the island of Hvar, Dalmatia: testing the text with GIS, in Lock, G. And Moffett, J. (eds) *Computer applications and quantitative methods in archaeology 1991*, British Archaeological Reports International Series, 577, 113-125.

Gamurrini, G.F. (1888) Telamone (Orbetello). Ruderi antichi ed oggetti scoperti sul poggio di Talamonaccio, *Notizie degli Scavi d'Antichità*, ,682-

Gejvall, N.G. (1982) Animal remains from zone A in Acquarossa, in Lundgren, M.B. and Wendt, L. Acquarossa Vol. III Zone A, *Skrifter Utgivna av Svenska Institutet I Rom* (4 series) 38 (3), 68-70.

Gent, H. And Dean, C. (1986) Catchment analysis and settlement hierarchy: a case study from pre-Roman Britain, in Grant, E. (ed) *Central places, archaeology and history*, Department of Archaeology and Prehistory University of Sheffield, Sheffield.

Gentili, G.V. (1968) Esplorazione di una fonderia bi bronzo, nota preliminare, *Studi Etruschi*, 36, 116-7.

Giannoni, G., Vergoni, R.L., Bruni, S. And Torelli, M. (1989) *Proposte per la costituzione della rete dei parchi archeologici della toscana. Parchi archeologici della provincia di grosseto. Documento per le consultazione*, Florence.

Giuliani, C.F. and Sommella, P. (1977) Lavinium: compendio dei documenti archeologici. *Parola del Passato* XXXII, 356-372.

Gras, M. (1985) *Trafics Tyrrhéniens archaïques*, Paris-Rome

Grassini, R. (1934) Essame cimico dei colori nelle pitture murali dell tomba dipinta delle Ficaie, *Studi Etruschi*, VIII, 327.

Guidi, A. (1985) an application of the rank-size rule to protohistoric settlements in the middle Tyrhennian, in Malone, C. And Stoddart, S. *Papers in Italian Archaeology IV, part III, Patterns in Protohistory*, 217-42. British Archaeological Reports International Series, Oxford.

Haggett, P., Cliff, A.D. and Frey, A. (1977) *Locational Models*, Edward Arnold, London.

Hamilton Gray, E.C. (1840) *Tours to the sepulchres of Etruria in 1839*, London.

Harris, W.V. (1971) *Rome in Etruria and Umbria*, Clarendon Press, Oxford.

Haselgrove, C. (1985) Inference from ploughsoil artefact samples, in Haselgrove, C. Millett, M. and Smith, I. (eds.) *Archaeology from the ploughsoil. Studies in the collection and interpretation of field survey data*, 7-30, Department of Archaeology, University of Sheffield, Sheffield.

Haselgrove, C. Millett, M. and Smith, I. (eds.) (1985) *Archaeology from the ploughsoil. Studies in the collection and interpretation of field survey data*, Department of Archaeology, University of Sheffield, Sheffield.

Haynes, S. (1992) La Grande-Bretagne et les Etrusques, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 310-19, Editions de la Réunion des musées nationaux, Paris.

Heron, C. and Pollard, A.M. (1988) The analysis of natural resinous materials from Roman amphoras. in E.A.Slater and J.O.Tate (eds.) *Science and archaeology, Glasgow 1987*, British Archaeological Reports 196, Oxford.

Heurgon, J. (1964) *Daily life of the Etruscans*, Weidenfeld and Nicolson, London.

Hodder, I. And Orton, C.R. *Spatial Analysis in Archaeology*, Cambridge University Press, Cambridge.

Houston, J.M. (1964) *The Western Mediterranean World*, Longman, London.

Johnston, A.W. and Jones, R.E. (1978) The SOS Amphorae, *Papers of the British School at Athens*, 73, 103-42.

Johnston, A.W. and Kennet. D. (1984) Late archaic alphabets from Le Mollaie, Etruria, *Bulletin of the Institute of Classical Studies*, 31, 115-8.

Jones G.D.B. (1962) Capena and the Ager Capenas, Part I, *Papers of the British School at Rome,* 30, 116-207.

Jones G.D.B. (1963) Capena and the Ager Capenas, Part II, *Papers of the British School at Rome,* 31, 100-58.

Jones, M.K., Quine, T. And Thomas, K. (1985) Il fondo valle, in Carandini, A. (ed) *Settefinestre. Una villa schiavistica nell'Etruria romana*, Vol. I., Panini, Modena

Judson, S. and Hemphill, P. (1981) Sizes of settlements in southern Etruria, *Studi Etruschi* 49, 193-202.

Kars, H., Moltzer, J.G. and Knoop, P.R. (1987) Petrography of archaic antefixes from Satricum, *Bulletin Antieke Beschaving*, 62, 57-66.

Keller, D. R. and Rupp, D. W. (1983) *Archaeological Survey in the Mediterranean area*, British Archaeological Reports International Series, 155, Oxford.

Kvamme, K. L. (1992) Terrain Form Analysis of archaeological location through Geographic Information systems, in Lock, G. And Moffett, J. (eds) *Computer applications and quantitative methods in archaeology 1991*, British Archaeological Reports International Series, 577, 113-125).

Kennet, D. (1984) *Tombs and tomb robbers in Etruria: Etruscan tombs in the locality of Magliano in Toscana*, unpublished dissertation, Institute of Archaeology, University of London.

Levi, D. (1927) Escursione archeologica nell' Agro Cosano, *Studi Etruschi*, I, 477-85.

Linington, R.E. (1980) Lo scavo di Banditaccia Laghetto, in Bardelli, O. J. *et al. Gli Etruschi e Cerveteri*, Electa, Milan.

Linington, R.E. (1982) Tarquinia, località Calvario: recenti interventi nella zona dellabitato protostorico. in *Archeologia della Tuscia*, 1, 117-23

Lloyd, J. (1991) Farming the highlands: Samnium and Arcadia in the Hellenistic and early Roman imperial periods, in Barker, G.W. and Lloyd, J. (eds) *Roman Landscapes: Archaeological Survey in the Mediterranean region*, British School at Rome, London.

Lugli, G. (1957) *La technica edilizia romana*, Rome.

Macmillan, H. (1892) *Roman Mosaics or Studies in Rome and its Neighbourhood*, Reprint, Macmillan and Co. London.

Macready, S. And Thompson, F.H. (1985) *Field survey in Britain and abroad*, Society of Antiquaries, London.

Maetzke, G. (1956) Magliano in Toscana; tombe etrusche in località Poggio Bacchino, *Notizie degli Scavi di Antichità*, VII, 6-40.

Magagnini, A. (1985) Gli edifici della zona 5b. in S.Stopponi (ed) *Case e palazzi d'Etruria*. Electa, Milan, 172-175.

Maggiani, A. (1981) La valle del Fiora, in Cristofani, M (ed) *Gli etruschi in maremma*, 77-95, Silvana Editoriale, Milan.

Maggiani, A. (1985) Le urne cinerarie, in Maggiani, A. (ed) *Artigianato Artistico*, 32-51, Electa, Milan.

Maggiani, A. (1985b) Sovana, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 84-8, Electa, Milan.

Maggiani, A. (ed) (1985c) *Artigianato Artistico*, Electa, Milan.

Malone, C. and Stoddart, S. (1994) *Territory, time and state. The archaeological development of the Gubbio basin.* Cambridge University Press, Cambridge.

Manconi, D. and Whitehead, N. (1994) The city, in Malone, C. and Stoddart, S. *Territory, time and state. The archaeological development of the Gubbio Basin*, Cambridge University Press, Cambridge, 178-87.

Mangani, E. (1983) *Museo civico di Asciano I materiali di Poggio Pinci*, Edizioni Vision Edizioni Viella, Rome.

Mansuelli, G.A. *et al.* (1985), Guida alla città etrusca e al museo di Marzabotto, Nuova Alfa Editoriale, Bologna.

Martelli, M. (1972) Contributi alla classificazione del più antico bucchero decorato a rilievo, *Studi Etruschi,* 40, 73-83.

Martelli, M. (1979) Prime considerazioni sulla statistica delle importazioni greche in Etruria in periodo arcaico, *Studi Etruschi* 47, 37-53.

Martelli, M. (1981) Populonia: cultura locale e contatti con il mondo greco, in L'etruria mineraria Atti del XII convegno di studi etruschi italici, 399-406, Firenze,

Martelli, M. (1981b) Le manifestazioni artistiche, in Cristofani, M. (ed) *Gli Etruschi in Maremma*, Silvana Editoriale, Milan.

Matteucig, G. (1972/1951) *Poggio Buco The Necropolis of Statonia*, (Reprint) Greenwood Press, Westport.

Mattingly, D.J. (1992) The field survey, strategy, methodology, and preliminary results, in Ben Lazreg, N. and Mattingley, D.J. Leptiminus (Lamta) a Roman port city in Tunisia, *Journal of Roman Archaeology*, Supplement 5, 89-114.

Mazzorin, J. DeG. (1987) Populonia, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 89-96, Istituto Poligrafico e Zecca dello Stato, Rome.

Maxwell, G. (1959) *The ten pains of death.* Longmans Green, London.

Mazzolai, A. (1984) *Grosseto il museo archeologico della Maremma*, 2nd ed Comune di Grosseto, Grosseto.

McVicar, J., Backway, C, Clark, G. and Housley, R. (1994) Agriculture, in Malone, C. and Stoddart, S. *Territory, time and state. The archaeological development of the Gubbio basin.* 94-105, Cambridge University Press, Cambridge.

Messerschmidt, E. (1926) Nota sulla tomba dipinta di Magliano, *Beiträge zur Chronologie der Etruskischen Wandmalerei.* Wittenberg.

Micali, G. (1844) *Monumenti inediti a illustrazione della storia degli antichi populi italiani*, Florence.

Michelucci, M. (1981) Vetulonia, in Cristofani, M (ed) *Gli etruschi in maremma*, Silvana Editoriale, Milan.

Michelucci, M. (1982) *Saturnia, ricerche nell'area urbana e nella necropoli del Puntone*, Comune di Pitigliano, Pitigliano

Michelucci, M. (1983) Marsiliana, *Studi Etruschi*, 51, 449-53.

Michelucci, M. (1984) Caletra, Καλου'σιον, Heba. Indagini sugli insediamenti etruschi nella bassa valle dell'Albegna, in *Studi di Antichità in onore di G.Maetzke 2*, p.377-392, Bretschneider, Roma.

Michelucci, M. (1985a) Armi e attrezzi agricoli: i ripostigli di Talamone, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 44-7, Electa, Milan.

Michelucci, M. (1985b) Doganella - Kalousion, in Carandini, A. ed *La romanizzazione dell'Etruria: il territorio di Vulci*, 110-114, Electa, Milan.

Michelucci, M. (1985c) Saturnia e il suo territorio. La Città, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 132-6, Electa, Milan.

Michelucci, M. (1985d) Marsiliana d'Albegna: tomba degli Avori, in Cristofani, M. (ed) *Civiltà degli etruschi*, 95-100, Electa, Milan.

Michelucci, M. (1985e) Ripostiglio con armi ed attrezzi agricoli. In M.Cristofani (ed) *Civiltà degli etruschi*, 140-142 Electa, Milan.

Michelucci, M. (1991) Manciano-Marsiliana d'Albegna, *Studi e materiali*, VI, 345-6.

Michelucci, M. (1991b) Orbetello-Doganella, *Studi e materiali*, VI, 349-50.

Michelucci, M. (1991c) Contributo alla ricostruzione del popolamento dell'Ager Caletranus in età arcaica. La necropoli di S.Donato do Orbetello. *Studi Etruschi*, LVII, 11-52

Michelucci, M. (in press) Marsiliana, in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Mihovilic, K and Rendic-Miocevic, D. (1988) *Histri i Etruščani monografije i katalozi arheološki muzij Istre, 5*, Pula.

Milanese, M. and Mannoni, T. (1986), Gli Etruschi a Genova e il commercio mediterraneo. *Studi Etruschi,* 52, 117-46.

Milani, L.A. (1885) Orbetello. Antichità riferibili alla necropoli Succosa acquistate pel Museo fiorentino, *Notizie degli Scavi d'Antichità*, ,241.

Milani, L.A. (1892) Telamone *Notizie degli Scavi d'Antichità*, ,108.

Milani, L.A. (1893) Piombo di Magliano, *Monumenti Antichi* II, 44

Millett, M. (1991) Pottery: population or supply patterns? The Ager Terraconensis approach, in Barker, G. and Lloyd, J. (eds). *Roman Landscapes: Archaeological Survey in the Mediterranean region,* 18-26, British School at Rome, London.

Minto, A. (1921) *Marsiliana d'Albegna*, Alinari, Florence.

Minto, A. (1925) Saturnia etrusca e romana. Le recenti scoperte archeologiche, *Monumenti Antichi*, XXX ,585-705

Minto, A. (1935) Per la topografia di Heba etrusca nel territorio di Magliano in Toscana, *Studi Etruschi*, IX, 11-59.

Montanari, G. B. (1929) *Corpus Vasorum Antiquorum.* Italia, fasc.7, Museo civico di Bologna, Bestetti e Tumminelli, Milan.

Moretti, M. (1984) *Cerveteri.* Instituto Geografico De Agostini, Novara.

Moretti, M. and Sgubini Moretti, A.M. (eds.) (1983) *I Curunas di Tuscania*, De Luca Editore, Rome.

Morigi Govi, C. (1992) Le 'Style Étrusque' in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, 300-09, Editions de la Réunion des musées nationaux, Paris.

Morris, I. (1987) *Burial and ancient society*, Cambridge University Press, Cambridge.

Morris, I. (1992) *Death-ritual and social structure in Classical Antiquity*, Cambridge University Press, Cambridge.

Moscati, P. (ed) (1987) Fonti letterarie, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 41-8, Istituto Poligrafico e Zecca dello Stato, Rome.

Müller-Karpe, H. (1959) *Beiträge zur Chronologie der Urnenfelderzeit nördlich und südlich der Alpen*, Walter de Gruyter & Co, Berlin.

Murray Threipland, L. (1963) Excavations by the North-West Gate of Veii 1957-8: Part II. The Pottery, *Papers of the British School at Rome* 31, 33-73.

Murray Thriepland, L. and Torelli, M. (1970), A semi-subterranean Etruscan building in the Casale Pian Roseto (Veii) area. *Papers of the British School at Rome* 38, 62-121.

Nicosia, F. (1992) L'épanouissement des aristocraties et le style orientalisant, in Parlavecchia, P. (ed) *Les Etrusques et l'Europe*, Editions de la Réunion des musées nationaux, Paris, 54-61.

Negroni Catacchio, N. (1981) *Sorgenti della Nova. Una comunità protostorica e il suo territorio nel'Etruria meridionale.* Roma, Edizioni Vision, Edizioni Viella.

Ostenberg, C.E. (1967) Luni sul Mignone e problemi della preistoria d'Italia, *Skrifter Utgivna av Svenska Institutet I Rom* (4 series) 25.

Ostenberg, C.E. (1969) An Etruscan house-type not described by Vitruvius. Evidence from Luni sul Mignone and other sites. *Opuscula Romana* VII,89-107.

Pairault Massa, F.H. (1985) Il tempio e il frontone, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 119-21, Electa, Milan.

Palmer, R.E.A. (1970) The Archaic Community of the Romans, Cambridge University Press, Cambridge.

Pallottino, M. (1939) Sulle facies culturali arcaiche dell'Etruria, *Studi Etruschi*, XIII, 85-129.

Pallottino, M. (1947) *Le origine degli etruschi*, Rome.

Pallottino, M. (1984) *Etruscologia*, 7th ed Hoepli, Florence.

Paribeni, E. (1986) La ceramica attica figurata, in De Marinis, R. (ed) *Gli Etruschi a nord del Po,* 140-163, Regione Lombardia - Provincia e Comune di Mantova, Mantova.

Parlavecchia, P. (ed) (1992) *Les Etrusques et l'Europe*, Editions de la Réunion des musées nationaux, Paris.

Pasqui, A. (1882) Saturnia, *Notizie degli Scavi d'Antichità*, 52-63.

Pavolini, C. (1981) Ficana: edificio sulle pendici sud-occidentali di Monte Cugno. *Archeologia Laziale* IV,258-268.

Pavolini, C. (1982) Ambiente e illuminazione. Grecia e Italia fra il VII e il III secolo a.C., *Opus* I, 291-313.

Peacock, D.P.S. (1977) Recent discoveries of Roman amphora kilns in Italy, *The Antiquaries Journal*, 57, 262-9.

Peña, J.T. (1987), *Roman period ceramic production in Etruria Tiberina: A geographical and compositional study*, Unpublished Ph.D. thesis, University of Michigan.

Perkins, P. (1991), Cities, cemeteries and rural settlements of the Albegna valley and Ager Cosanus in the Orientalizing and Archaic periods, in Herring, E., Whitehouse, R. and Wilkins, J. (eds)., *Papers of the Fourth Conference of Italian Archaeology, Vol.1,* 135-144, Accordia Research Centre, London.

Perkins, P. (1998) Etruscan pottery from the Albegna Valley Ager Cosanus survey *Internet Archaeology* 4, (http://intarch.ac.uk/journal/issue4/perkins/index.html)

Perkins, P. (in press) Il Periodo Etrusco, in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Perkins, P. and Walker, L. (1990) Field survey of the Etruscan city at Doganella *Papers of the British School at Rome*, 58, 1-144.

Peroni, R. (1985) Presenze micenee e forme socioeconomiche nell' Italia protostorica, in *Atti del XXII convegno di studi sulla Magna Grecia Taranto* 1982, 218- Taranto.

Pesando, F. (1989) *La casa dei Greci.* Longanesi and Co, Milan.

Phillips, K.M. Jr. (1978) Orientalising gem stones from Poggio Civitate (Murlo, Siena), *Parola del Passato*, 33, 355-369.

Phillips, K.M. Jr. (1989) Greek objects at Poggio Civitate, Murlo, *AnalRom* 17-18, 29-42.

Phillips, K.M. Jr. (1993) *In the hills of Tuscany, recent excavations at the Etruscan site of Poggio Civitate (Murlo, Siena)*, The University Museum, University of Pennsylvania, Pennsylvania.

Phillips, K.M. Jr. et al. (1985) Poggio Civitate (Murlo). In S.Stopponi (ed) *Case e palazzi d'Etruria.* 64-154, Electa, Milan.

Pianu, G. (1985) I luoghi della cultura figurativa, in Torelli, M. *L'Arte degli Etruschi*, Edizioni Laterza, Rome - Bari.

Pittau, M. (1990) *Testi etruschi*, Bulzoni editore, Rome

Pizziolo, G. Ed (1986) *La Toscana, Volando*, Sansoni Editore Giunta regionale toscana, Florence

Potter, T.W. (1976) *A Faliscan town in south Etruria*, British School at Rome, London.

Potter, T.W. (1979) *The changing landscape of South Etruria*, Paul Elek, London.

Potter, T.W. (1985) *Storia del paesaggio dell'Etruria Meridionale*, La Nuova Italia Scientifica, Rome.

Prayon, F. (1975) *Frühetruskisch Grab- und Hausarchitektur*, F.H.Kerle, Heidelberg.

Puglisi, S.M. (1959) *La civiltà appenninica. Origine delle communità pastorali in Italia,* Florence.

Py, F. and Py,M. (1974) Les amphores etrusques de Vannages et de Vilevieille (Gard). *Mélanges de l'École Français de Rome, Antiquité,* 86, 141-254.

Pyrgi (1970) = Various Authors, La ceramica ed altri rinvenimenti, *Notizie degli Scavi di Antichità* XXIV, Supp.II.

Rackham, H. (1947) *Pliny Natural History*, Heinemann Ltd. London.

Randall-Maciver, D. (1927) *The Etruscans*, Clarendon Press, Oxford.

Rasmussen .T. (1979) *Bucchero pottery from South Etruria*, Cambridge University Press, Cambridge.

Rasmussen, T. (1990) Tuscania and its territory in Barker, G. and Lloyd, J. (eds). *Roman Landscapes: Archaeological Survey in the Mediterranean region,* 106-14, British School at Rome, London.

Raveggi, P. (1936) Orbetello. Recenti scoperti in prossimità del supposto Vico Cosano *Notizie degli Scavi di Antichità*, ,408.

Raveggi, P. (1939) Recenti ritrovamenti nell'Agro Cosano e Talamonese, *Studi Etruschi*, 13, 403-4.

Rendeli, M. (1985) L'oppidum di Rofalco nella Selva del Lamone, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 60-61, Electa, Milan.

Rendeli, M. (1989) Vasi attici da mensa in Etruria note sulle occorrenze e sulla distribuzione, *Mélanges de l'École Français de Rome, Antiquité*, 101, 545-79.

Rendeli, M. (1993) *Città aperte. Ambiente e paesaggio rurale organizzato nell'Etruria meridionale costiera durante l'età orientalizzante e arcaica,* Gruppo Editoriale Internazionale, Rome.

Rendini, P. (1985) Ghiaccioforte, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 131-2, Electa, Milan.

Rendini, P. (1989) Magliano in Toscana, *Studi Etruschi*, LV, 481-4.

Rendini, P. (in press) Ghiaccioforte, in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Renzi, A. (1991) Manciano-Marsiliana d'Albegna, loc. Banditella, *Studi e materiali*, VI, 346-7.

Rhodes, D.E. (1973) *Dennis of Etruria, a life of George Dennis*, Cecil and Amelia Woolf, London.

Rizzo, M.A. (ed) (1989) *Pittura etrusca al museo di Villa Giulia*. De Luca Editore, Rome.

Rizzo, M.A. (1990) *Le anfore da trasporto e il commercio etrusco arcaico*, De Luca Edizioni d'Arte, Rome.

Robinson, N., Evershed, R.P., Higgs, W.J., Jerman, K. and Eglinton, G. (1987) Proof of the pine wood origin for pitch from Tudor (Mary Rose) and Etruscan shipwrecks: application of analytical organic chemistry in archaeology. *Analyst* 112, 637-644.

Romualdi, A. (1985) Il popolamento in età ellenistica a Populonia: le necropoli, in Camporeale, G. (ed) 185-6, *L'Etruria Mineraria*. Electa, Milan.

Sallares, R. (1991) *The ecology of the ancient Greek world*, Duckworth, London.

Salmon, E.T. (1982) *The making of Roman Italy*, Thames and Hudson, London.

Santangelo, M. (1954) *L'antiquarium di Orbetello*, Rome.

Scheffer, C. (1986) La vita quotidiana nell'ambiente domestico. in O.Wikander and P.Roos (eds) *Architettura etrusca nel Viterbese*, 109-128, De Luca Editore, Rome.

Scheffer, C. (1987) Forni e fornelli etruschi in età arcaica, in Barbieri, G. (ed) *L'alimentazione nel mondo antico. Gli etruschi*, 97-106, Istituto Poligrafico e Zecca dello Stato, Rome.

Sensi, L. (1987) *Gli scavi di G. Sordini sul poggio di Talamonaccio*, Olschki Editore, Florence

Sereni, E. (1970) Città e campagna nell'Italia preromana. in Adamesteanu, D. *et al. La città Etrusca e Italica preromana*, 109-128, Istituto per la storia di Bologna, Bologna.

Sgubini Moretti, A.M. (1981) Vulci, in Cristofani, M (ed) *Gli etruschi in maremma*, 53-72, Silvana Editoriale, Milan.

Sgubini Moretti, A.M. (1986a) Confronti nell architettura funeraria rupestre: qualche esempio. In O.Wikander and P.Roos (eds) (1986) *Architettura etrusca nel Viterbese*. De Luca Editore, Rome, 137-44.

Sgubini Moretti, A.M. (1986b) Contributi all'archeologia vulcente. *Archeologia della Tuscia* II,73-104.

Shennan, S. (1988) *Quantifying archaeology*, Edinburgh University Press, Edinburgh.

Snodgrass, A.M. (1977) *Archaeology and the rise of the Greek state*, Cambridge University Press, Cambridge.

Sommella, P. (1967) Antichi campi di battaglia in Italia, *Quaderni dell'Istituto di Topografia dell' Università di Roma*, III, 11-34.

Sordi, M. (1976) Intervento, in Cristofani, M. Il sistema onomastico in *L'etrusco arcaico*, Biblioteca di Studi Etruschi, 10, 93-104.

Sorrentino, C. (1981a) La fauna in Berggren, E. And Berggren, K. San Giovenale Vol II Fasc.2 Excavations in area B 1957-60, *Skrifter Utgivna av Svenska Institutet I Rom* (4 series) 26 (2,2), 58-64.

Sorrentino, C. (1981b) Appendix in Berggren, E. And Berggren, K. San Giovenale Vol II Fasc.4 The semi-subterranean building in area B, *Skrifter Utgivna av Svenska Institutet I Rom* (4 series) 26 (2,4), 58-64.

Spivey, N.J. (1987) *The Micali painter and his followers*, Clarendon Press, Oxford.

Spivey, N.J. (1991) Greek vases in Etruria, in Rasmussen, T. and Spivey, N.J. *Looking at Greek vases*, Cambridge University Press, Cambridge.

Spivey, N.J. and Stoddart, S. (1990) *Etruscan Italy*, B.T. Batsford Ltd., London.

Stefani, E. (1922) Veio - esplorazioni dentro l'area dell'antica città. *Notizie degli Scavi di Antichità* XIX,379-404.

Strandberg Olofsson, M. (1986) L'area monumentale di Acquarossa. In O.Wikander and P.Roos (eds) *Architettura etrusca nel Viterbese*. Rome, De Luca Editore, 81-92.

Stoddart, S. (1994) The domestication of the Proto-Villanovan mind, *Antiquity,* 69, 411-4.

Stone, G.D. (1993) Agricultural abandonment: a comparative study in historical ecology, in Cameron, C.M. and Tomka, S.A. (eds) *Abandonment of settlements and regions*, 74-84, Cambridge University Press, Cambridge.

Swan, V.G. (1984) *The pottery kilns of Roman Britain*, Her Majesty's Stationery Office, London.

Torelli, M. (1977) Il santuario di Gravisca, *La parola del Passato*, 32, 398-407.

Torelli, M. (1981) *Storia degli Etruschi*, Editori Laterza, Rome - Bari.

Torelli, M. (1982) Per una definizione del commercio greco orientale: il caso di Gravisca, *La parola del Passato*, 37, 304

Torelli, M. (1985) L'età del declino, in Cristofani, M. (ed) *Civiltà degli etruschi*, Electa, Milan, 209-398.

Torelli, M. (1987) *La società Etrusca*, La nuova Italia Scientifica, Rome.

Tortorici, E. (1985) Regisvilla, in Carandini, A. (ed) *La romanizzazione dell'Etruria: il territorio di Vulci*, 53, Electa, Milan.

Trigger, B. G. (1989) *A history of archaeological thought*, Cambridge University Press, Cambridge.

USDA (1951) *Soil Survey Manual. Agricultural Manual 18*, United States Department of Agriculture, Washington.

Van Berghem, J.W., Meijvogel, T. and Windmeijer, P. (1984) *Soil survey of the Albegna Valley, S.W. Tuscany, Italy*, University of Amsterdam, Amsterdam.

Vickers, M. (1985/6) Imaginary Etruscans: the changing perceptions of Etruria since the fifteenth century, *Hephaistos,* 7/8, 153-68.

von Vacano, O. W. (1961) Oedipus zwischen den Viergespannen. Studien zur Komposition dem Giebelskulpturen von Telamon, *Römische Mitteilungen*, 68, 9-23.

von Vacano, O. W. (1975) Der Tempelgiebel von Telamon, *Römische Mitteilungen*, 82, 217-23.

von Vacano, O. W. (1985) *Gli Etruschi a Talamone*, Bologna.

von Vacano, O. W. (1988) *Der Talamonaccio alte und neue probleme*, Olschki Editore, Florence.

von Vacano, O. W. and von Freytag, B. (1982) Il frontone di Talamone e il mito dei 'Sette a Tebe', *Studi e Materiali* 5, 179-

Ward-Perkins, J. B. (1955) Notes on southern Etruria and the Ager Veientanus, *Papers of the British School at Rome,* 23, 44-72.

Ward-Perkins, J. B. (1961) Veii. The historical topography of the ancient city, *Papers of the British School at Rome,* 29, 1-123.

Ward-Perkins, J. B. (1968) The Ager Veientanus north and east of Veii, *Papers of the British School at Rome,* 36, 1-218.

Walker, L. (in press) Il popolamento e l'utilizzazione del suolo (VII-IV secolo), in Carandini, A. and Fentress, E.B. (eds). *Paesaggi d'Etruria tra L'Albegna e La Fiora,* Volume I.

Wikander, O. and Roos, P. (eds) (1986) *Architettura etrusca nel Viterbese*. De Luca Editore, Rome.

Wheatley, D. (1996) Between the lines: the role of GIS-based predictive modelling in the interpretation of extensive survey data, in Kamermans, H. And Fennema, K. *Interfacing the Past. Computer Applications and quantitative methods in archaeology CAA95 Vol. II*, Analecta Praehistorica Leidensia, 28, 275-292

White, K.D. (1975) *Farm equipment of the Roman world.* Cambridge University Press, Cambridge.

Whitehead, N. (1994) The Roman countryside, in Malone, C. and Stoddart, S. *Territory, time and state. The archaeological development of the Gubbio basin.* Cambridge University Press, Cambridge.

Zifferero, A. (1980) *L´Abitato Etrusco di Piana di Stigliano* Gruppo Archeologico Romano, Rome.

Index